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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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Smithsonian Institute Washington D.C.

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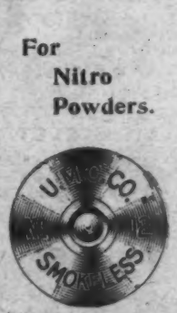

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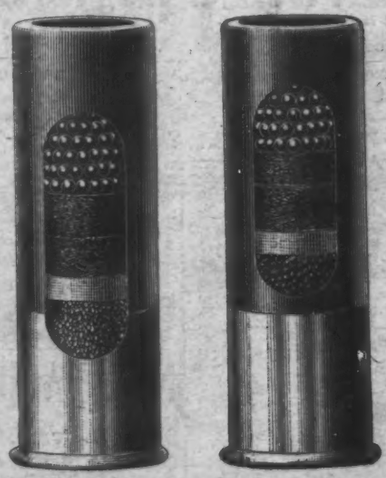

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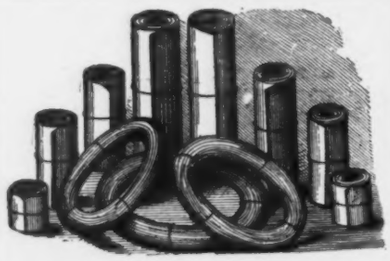
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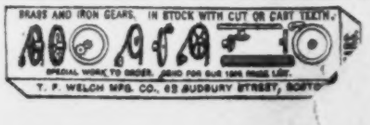
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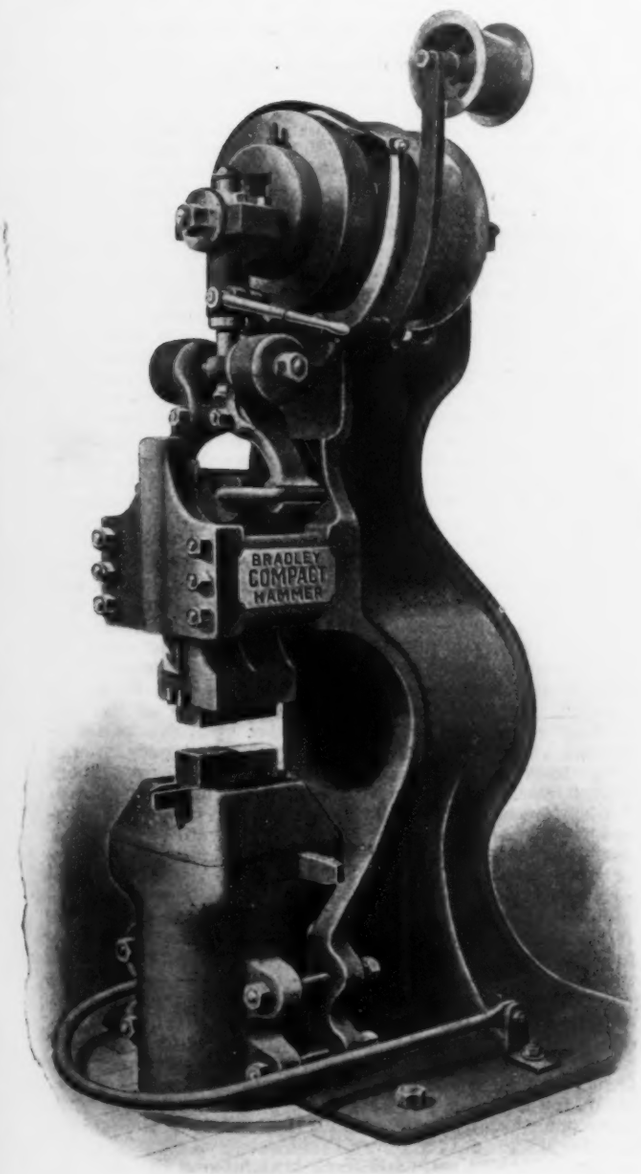
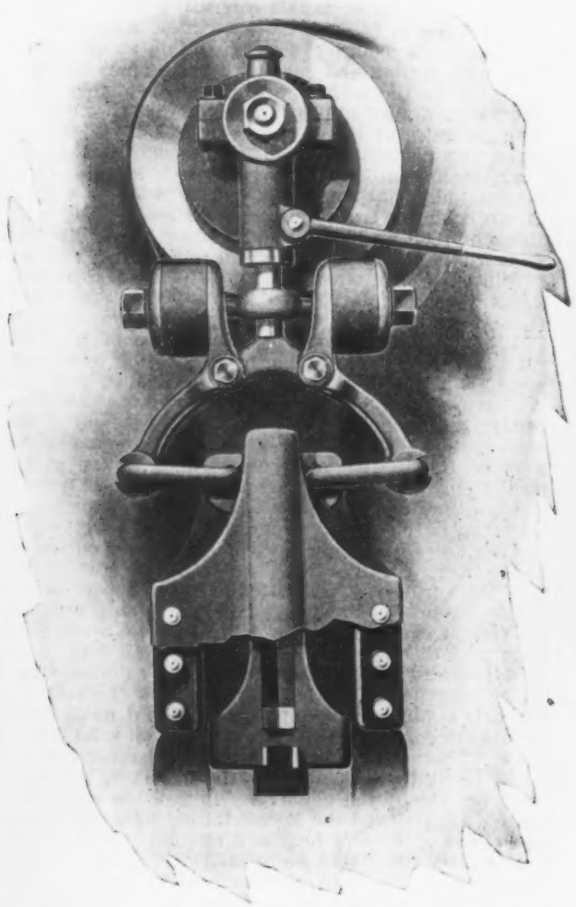
THE IRON AGE.

THURSDAY, OCTOBER 5, 1899.

The Bradley Compact Hammer.

The compact hammer built by the Bradley Company of Syracuse, N. Y., is of somewhat less weight than the other styles of power hammers made by the same company of corresponding rating. While it has fewer parts the use of the highest grade of material and workmanship has resulted in maintaining the capacity and durability. The cushioning of the blow by rubber springs or cushions has been retained in this hammer, but with less weight of rubber. The working parts of the hammer occupy but small space, and are in plain view. Force and elasticity are given the blow by the manner in which the head or ram is connected with the crank, aided greatly by the rubber springs, which add life and snap to the action of the hammer, and so cushioning the working parts against jar and concussion that wear is reduced to a minimum. The length of stroke is adjusted by shifting the position of the crank pin in the slot in the balance wheel. Sometimes short, quick blows are required, at others full length strokes. The opening between the dies is regulated to accommodate work of various thicknesses, by the slip sleeve and its lever, connected directly with the crank pin. There must always be some opening between the dies, varying with the size to which the work is to be finished. A foot treadle extending around the front and sides is used to bring the idle pulley against the slack running belt, by which the hammer is operated. The greater the foot pressure the greater the speed and force of blow. When the treadle is released it causes a brake to act on the rim of the balance wheel, stopping the hammer. The anvil block is a





Enlarged View of Working Parts.

THE BRADLEY COMPACT HAMMER.

separate casting, circular in shape, so that by adjusting the bolts which hold it against the frame the dies may be aligned perfectly.

These hammers are made in sizes from 15 to 200 pounds weight of hammer, giving average blows per minute from 400 to 200, working iron from ¾ to 3 inches and occupying a floor space from 22 to 44 inches square.

The Industrial Growth of the United States.

From the presidential address of James Douglas before the American Institute of Mining Engineers we take the following passages:

Transportation and Transmission.

The railroads, steamboats and telegraphs have been both the apostles and missionaries of free thought and free speech. But they have served another purpose which has vitally influenced the current of policy and the drift of the metallurgical industry. It is difficult to realize the diminutive proportion of wealth on this continent in the first two decades of this century. In the first decade of the nineteenth century the population of this country was 7,239,000. There were 903 post offices, and only 21,000 miles of post roads. Four cities only boasted a population of over 10,000 inhabitants, and the post office revenue was the insignificant sum of $231,000. By 1830 the population had increased to 12,666,021, but the manufacture of metals was still a local industry, and so it continued for two more decades, while the railroad system of the country was expanding so as to link section with section and fuel with ore. The year 1830 was numerically the critical period of our history, for in it the railroad first appears as a factor in our industrial life; 23 miles of track had been laid. By 1840 locomotives were running over 4535 miles of railroad. In that year the first attempt was made to incorporate into our census industrial statistics by quantities—not by value. If we compare two items of statistics of 1840 with the items of 1898 we shall ascertain how potent the railroad is as a stimulant to mining and metallurgy, and what a revolution it has wrought. In 1840 there were 804 furnaces which made 256,100 tons of cast iron. In 1898 there were 202 blast furnaces in operation, making 11,773,934 tons. If we multiply the number of miles of railroad in 1840 by the number of tons of pig iron made the same year, we get as a product approximately the figures (for iron) for 1898. The magnificent iron industry of the country has thus kept pace with the extension of its railroad system. The lines of growth have not always been parallel, but the harmony between these two great factors of our national progress is not accidental.

Equally important in its bearing on the iron trade has been the development of internal navigation. In 1898 the ton miles of freight moved by steamer on the Great Lakes were 17,891,597,030. Of this freight 13,655,432 tons were iron ore from Michigan, Minnesota and Wisconsin. When Lake Superior began to ship ore in 1856 the freight charged to Erie points was $3, while in 1899, from Duluth to Erie points, the rate was only 57 cents. To-day old advocates of navigation by canal are hesitating to recommend further contributions of State money for their enlargement—hopeless of inland navigation being able to compete with railroad rates at 4 mills per ton mile. This virtual obliteration of distance by steam power has altered completely the industrial methods of every section of the country. Before the railroad and steamboat produced the industrial unification of the continent not only were food and clothing the products of local and disseminated manufacture, but such a necessary metal as iron was cast in small furnaces or reduced in small bloomeries wherever ore and charcoal were found in even limited quantities near a water power. To transport either iron ore or fuel any distance over bad country roads to a large central establishment was less economical than running the village furnace or forge. We find, therefore, that the furnaces and forges of 1840 were scattered over the land in every district. Soon after that commenced the concentration of ore mining and the shifting of the centers of metallurgical industry to a few favored localities—a process which has tended to the serious detriment and even destruction of some of the older mining and metallurgical districts, and the creation of prosperous communities in what was, a generation ago, an inaccessible wilderness. This concentration has proceeded till, at present, there are virtually only three great centers of iron manufacture—Pittsburgh, Chicago and the Middle Southern States—and two of iron ore mining, counting the iron mines around Lake Superior as one. And instead of erecting the furnaces near the ore the ore is carried to the fuel—in one instance 1000 miles from the Mesaba range to Pittsburgh. By the agency of steam in the mining, hauling and transportation of the ores, ores from the Mesaba range have been delivered at the Pittsburgh furnaces at $4 per ton, the transportation alone involving 50 miles of railroad haul to a lake port, transfer to steamers, 900 miles of water carriage, another transfer from boat to railroad and a further journey of 80 miles by railroad before delivery at the furnaces.

Cheap transportation has not affected the iron industry only. It has made it possible to utilize the copper and lead ores of the West and to reduce the cost of their treating by taking advantage of neighboring natural conditions. For instance, Anaconda ores can be transported for a few cents a distance of 36 miles from Butte to the water supply at Anaconda, and it is advantageous to carry the crude ores of the Boston & Montana Copper Company over 30 miles of railroad so as to obtain the advantages of the water power of the Great Falls of the Missouri. But the very romance of transportation was reached in the following instance: Matte was bought at full prices in Tennessee, transported by railroad to Norfolk, Va., transshipped thence to Tampico in Mexico, carried half way across the Republic, saturated with gold and silver, concentrated into black copper, and then brought back by rail and water to a port in New Jersey for electrolytic treatment, and yet the operation was profitable.

Everywhere the world over the same wonderful interchange of products and transfer of energy from one part of the world or from one country to another is being effected through the same agency, making the whole world akin and more or less independent. And with the improvement of motive power, both by land and sea, the bettering of railroads, the deepening of canals, the increased security of the high seas, the present cost of transportation, low as it is, will be materially reduced till the day will come that the natural resources of every land will be the common property of the whole world, unless their utilization be restricted and protection be practiced against exports instead of imports. Already England, Germany and France derive their main supplies of ore from foreign lands. The great German iron works at Stettin, Germany, rely entirely on imported crude material. But the quantity involved is so great as to preclude all risk of industrial famine or exhaustion of such raw material. In the North of Sweden, within the Arctic Circle, are iron ores of phenomenal deposit, that of Gelivaara is already connected with the Baltic by a line of railroad, but it is small compared with the mountain of ore of the Luossavara, which is said to contain above water line 500,000,000 tons of 60 per cent. ore. The Hudson's Bay Company have also on the shores of Hudson's Bay great masses of manganiferous magnetite, and these are excluded by the cold from the markets of Europe for hardly a longer portion of the year than the ores shipped from Duluth on Lake Superior. But even the Lake Superior ores themselves may some day or other find themselves profitably brought into the European market. At present, through the deepening of the Canadian canals, large Lake Superior steamers can discharge their cargo in Montreal, and steamers of the whaleback type load on Lake Superior for any seaport of the world. California has drawn on New South Wales for coal and on Japan for sulphur. Nature's commodities, now that we are learning how to control and use nature's forces, are becoming the common property of all mankind. If this be so, and if the world's resources of the future are to become more and more cosmopolitan, the winners of the race whose goal is industrial prominence will not necessarily be those who, within their own national domain, possess the crude elements of industrial workmanship, but those who, by native wit and scientific learning and research, can, out of these crude elements, manufacture most cheaply and of best quality what the world at large wants. And if certain groups of the world's inhabitants progress more rapidly than others, it is not primarily because they will possess an undue share of nature's gifts, but because they will evince more aptitude in availing themselves of the opportunities which nature offers them.

This is one of the most important lessons the parting century teaches, and has received its most striking illustration from our own history. Our industrial growth has excited the wonderment of the world. As already pointed out, it has been rendered possible by the extension of transportation facilities. It would not have been so rapid and far reaching in its influence had the nation not possessed within its own bounds natural resources of such variety and in such bountiful quantity. But in addition to these political and social forces have concurred to facilitate our growth. Only two generations have passed since the era of rapid industrial wealth began. The period has been short and the material we have had to work upon superabundant. We have been able to draw on the untouched resources of a whole continent, itself marvelously rich. Never in the history of mankind have so many favorable causes combined to further the growth of an industrial people. Nevertheless, but for certain qualities in the national character, or, perhaps, to speak more correctly, in the spirit of our industrial

classes, these bounties of nature and these acquisitions of science would have remained useless and neglected.

The Substitution of Machinery for Labor.

Yet when we try to distinguish the social causes which have been the impelling influences in bringing about the rapid rise of this country in the industrial school, apart from its natural resources, we cannot but recognize as advantages certain points of difference which distinguish the conditions existing here from those of the older industrial centers of Europe, which are hereafter to be our competitors, for as we have entered, politically, of late the community of nations, so, industrially, we have in almost every article of manufacture gone into the fight for our place in the markets of the world. Labor abroad has generally been superabundant, here scarce, and therefore dear. To this cause is due in part, if not altogether, the substitution of machinery for hand labor in every department of our life. It has become the guiding and controlling principle with every American that it is more economical to use your wits, whether in the kitchen or in the workshop; that nature's forces are less easily exhausted than your own, and that iron and steel can stand a heavier strain than human bone and sinew. Acting on this principle, wherever machinery can be made to do man's work, the instinct of the American is to devise some means to bring this substitution about. The result is that more work is done with less expenditure of manual labor in this country than in any other. Half a century ago to make iron in the small furnaces then in blast at least six days' labor was expended per ton of pig metal. To-day at the large steel works 2 tons of finished steel are made from the ore per man employed, including the clerical force.

In the field of copper the impetus set by the iron master has reached the more sluggish copper metallurgists. Instead of the small brick cupolas in which it was thought a feat to smelt 10 tons a day, furnaces are running under high blast which consume 400 to 500 tons of ore per day and discharge their valuable contents into Bessemer converters which blow it into pure copper in as few minutes as it used to take days to roast and reroast, to fuse and re-fuse the ores and the mattes when the cupola process of reduction was used.

Machinery has not so completely taken the place of the man in our copper works as in our iron and steel works, but every year witnesses so steady an advance in that direction that to-day ore extracted in the morning can be loaded as copper on the cars by evening.

A secondary but important effect of the extended use of machinery is the necessity it forces on the manufacturer of producing large quantities. Take, for instance, the Bessemer converter as applied to copper. The smallest converter now used will make from 1,000,000 to 1,500,000 pounds of copper per month from a 50 per cent. matte. If, therefore, this limit is reached, necessity almost compels a duplication of the output which would bring the production of a small works up to the total output of the whole country half a century ago.

Machinery is, of course, used the world over, but it is nowhere so generally applied to the purposes of life as by ourselves. Nor is it elsewhere forced by the ingenious arrangement of parts and by urging it to its fullest capacity to do the work we demand of it. In this respect it is that the practice of our mills has become conspicuous the world over. Take for comparison the work done per converter for the steel mills of Europe and here. By improved mechanical appliances and the arrangement of parts, converters as planned originally by Bessemer, Holley and our other steel workers, have brought the capacity of a 15-ton converter up to a far higher point than in Europe. Our steel worker has the advantage over his European rival in the character of the pig he has to work with, but after making all allowances the claim must be admitted that by study and economy he has raised the capacity of his plant and reduced expenditure, in spite of high cost of labor, to an extent not yet achieved on the other side.

To our discredit, our technical workers have made no important new application of metallurgical practice comparable to the Bessemer or the Siemens-Martin or the Thomas process, nor were we even the first to apply the pneumatic method to the concentration of copper, but once an invention has been made, no matter what or where its origin, it is adopted with almost a reckless abandon and driven to do our work at a speed that is almost appalling.

In many respects, however, our rivals in trade are handicapped, and it is only fair to take credit for what credit is due us. In this country no local tie binds the employer and employee. In the Old World it is different. There certain branches of manufacture have been planted for generations in the same locality. The business conducted by the same families and the work done by the ancestors is done by the proprietor of to-day. Thus has grown up a sense of general interest, if not ownership, in the works, which makes it difficult to introduce modern methods and machinery which necessarily involve a dislocation of old associations, to say the least. This militates against progress abroad in a way which is difficult to understand here.

The position in which we stand at the opening of the twentieth century is thus outlined. We have a right to be proud of it and also of the part our institute has played in assisting the progress of the mining and metallurgical arts.

Labor Unions Not Privileged.

Under the above caption the Chicago *Evening Post* for September 29 editorially discusses recent developments in connection with trades unions. A fall festival will be celebrated in that city this month, the success of which was for a time seriously threatened by labor leaders because the stone on the new Government building is alleged to be cut by non-union workmen. The *Post* says:

There is something paradoxical and peculiar in the present phase of the labor organization movement, and the festival troubles serve to direct attention to the paradox. We are all aware that prior to the advent of the industrial trust or combination trades unions claimed special consideration from the public. Organization among wage workers was commended and encouraged by public men and even by the courts. Not only was the right of workmen to organize for self-protection and the promotion of their welfare conceded, but organization was deemed socially beneficial. Tyranny, abuse of power and lawlessness on the part of labor were always condemned, but they were regarded as excrescences and unfortunate accidents.

Since the appearance of the industrial combinations of capital there has been a change in the general attitude toward labor organizations, a perfectly natural change. It is perceived that a labor union is indistinguishable from a combination "in restraint of trade." A labor union seeks to reduce competition in labor, to control the market, to regulate wages, and, in many cases, to restrict the output. Any proper definition of combinations in restraint of trade would necessarily include labor unions.

Of course there is reasonable restraint of trade and unreasonable restraint. To the former there is no objection, and it may be contended that labor unions do not unreasonably restrain trade, since ordinarily they aim to secure nothing but fair wages and decent treatment. Grant this, and it obviously follows that the same allowance must be made for combinations of capital that do not unreasonably restrain trade and seek nothing more than a fair rate of profit. Some labor leaders admit the justice of this conclusion and profess toleration for such combinations of capital as are not guilty of monopolistic encroachments.

So far so good; but at this point the paradox appears. Combinations of capital have to defend their existence, to prove the "reasonableness" of their objects and practices. They expect nothing more than the admission of their legitimacy. They do not, even in their dreams, demand official recognition, warm approval and laudation. Labor, on the other hand, is not satisfied with the recognition of the legitimacy of its organizations. It expects the moral approval of government. It acts as if there were something hallowed, sacred and highly altruistic about trades unions. It asks signal official demonstrations in favor of such unions. It expects the President, governors and mayors to patronize and sanction union labor by accepting cards of membership from unions. It expects discrimination against non-union labor on the part of cities and States.

Where, pray, is the reason or rhyme in all this? Union workmen choose to combine for self-protection, as they have a right to do, while non-unionists do not care to combine, thinking combination either useless or undesirable. Are the latter guilty of any offense? Do they deserve reproach and criticism for their attitude? Have they not as good a right to compete as the unionists have to combine? Have they not equal rights to liberty and labor? The unionists never think of these questions, and imagine that they are invested with a peculiar and solemn moral importance. This is a strange paradox in these days of anti-combination agitation.

John Mitchell, national president of the United Mine Workers, says that all organized coal miners in the country will demand a substantial advance in wages at the expiration of the present scale. The amount to be asked has not yet been decided upon, but Mr. Mitchell says it will not be unreasonable.

A Havana dispatch says that Federico Kohley, representing an English syndicate, has purchased 30 square miles of land in the Province of Pinar del Rio, containing valuable iron mines.

The Sao Paulo Hydraulic Plant.

Twelve civil and electrical engineers sailed for Brazil last week under the direction of Hugh L. Cooper. They will disembark at Rio Janeiro and will then travel inland to the city of Sao Paulo, where they will commence the tremendous undertaking of damming the Tiete River, 23 miles above the city, to obtain power for the operation of an electric plant. This plant will operate a street railway and electric lighting plant for the Sao Paulo Railway, Lighting & Power Company, Limited. This company were incorporated under the laws of Canada with $5,000,000 capital, which is controlled by capitalists in this country and Canada.

Col. G. B. M. Harvey and Frederick S. Pearson of New York are largely interested in the project. The men backing the enterprise constitute the so-called Pearson-McKenzie syndicate. William McKenzie, president of the Toronto Street Railway Company, is temporary president of the Sao Paulo Company. Frederick S. Pearson, consulting engineer of the Metropolitan Street Railway Company, is engaged in a similar capacity in the Sao Paulo Company. He has just returned from Sao Paulo, where, in company with R. C. Brown, former chief engineer of the Metropolitan Street Railway Company and now general manager of the Sao Paulo project, he has been inspecting the ground, preparatory to the beginning of operations. B. F. Pearson of Halifax is also interested.

The power is to be derived from Parnayba Falls on the Tiete River. In the report of C. P. Folsom, hydraulic engineer, he states: "I found a cross section of 1690 square feet with a mean velocity of 166 feet per minute, which would equal 280,540 cubic feet per minute flowing in the stream. This quantity of water would produce 425 net horse-power per foot fall, taking 80 per cent. as efficiency in all the turbines, or if 60 feet fall is obtained the total horse-power would be 25,500." Owing to the fact that these measurements were taken during the rainy season allowances were made which brought the total horse-power possible of being obtained to 18,180. Mr. Folsom further states that the entire fall is about 1½ miles long and is in a series of rapids, there being no abrupt falls.

Chief Engineer Pearson in his report states that the company will require but from 11,000 to 18,000 horse-power for the operation of their plants.

Plans have been completed for the entire hydraulic power plant and the franchises for lighting the city and operating an electric railway have been granted. The route of the railway system covers the entire city and the work of building it has begun. Before the advent of the Pearson-McKenzie syndicate the city could boast of but an antediluvian mule railway. Coal in Sao Paulo sells for $10 per ton and wood is equally costly. As a consequence the price of gas and electric lighting is high and none of the city lighting is yet done by electricity. Five thousand commercial incandescent lamps are, however, supplied from the present station.

A temporary steam power station is now in operation by the Pearson-McKenzie syndicate. It consists of two 225 kw. General Electric generators for direct connection with the Robb Engineering Company's engines, and the steam is supplied by Cahall boilers. About 10 miles of track has been laid and 15 Brill cars of the Broadway type are in operation. The track material was furnished by the Pennsylvania Steel Company. This road is being extended to 35 miles of track. The method of track construction adopted by the company includes the standard 7-inch girder rail, weighing 90 pounds per yard. The rails are mounted on steel ties spaced every 10 feet. The ties are set in concrete, the latter being carried a distance of 4 11-16 inches below the base of the rail. The rails are connected with the ties by clips and are bonded to them, making a cross connection. The joints are also bonded by the Anderson West End bond. The guard rail weighs 110 pounds per yard and the T-rail for suburban service 62 pounds.

The Riter-Conley Mfg. Company of Pittsburgh were last week awarded the contract for the steel structure of the power house. They also were recently awarded the contract for 1000 tons of steel riveted conduits, which are to extend for 25 miles from the dam to the hydraulic plant. Each conduit will be 3000 feet long and 12 feet in diameter, the steel ranging from ⅜ to ½ inch in thickness. The turbines to be used have been purchased from the Stillwell, Bierce-Smith, Vaile Company of Dayton, Ohio, at a cost of $500,000.

The Garvin Machine Company of Spring and Varick streets, New York, and Manning, Maxwell & Moore of New York were awarded contracts for machine tools to be used in the machine shop to be operated in connection with the plant. Nearly all of the material required in this work will be purchased in this country.

The old Ahl iron mines along the Potomac River, near Barberton, Jefferson County, W. Va., which have been worked as far back as 1776, are again being operated after a lapse of many years. A. G. Lewis of Sandy Hook, Md., has charge of the operations. About 700 tons of ore are being taken out monthly and shipped to Dunbar, Pa.

The Sturtevant Exhaust Head.

One of the important features of a modern steam plant is an exhaust steam pipe head. To be effective it must thoroughly separate the water from the steam, and thereby prevent the constant spraying of roofs and walls, with consequent deterioration and expensive repairs. In the form of exhaust head built by the B. F. Sturtevant Company, Boston, Mass., and illustrated herewith, the principle of centrifugal force is utilized to secure complete separation. Dry exhaust steam weighs only 0.038 pound per cubic foot, while water of the same temperature weighs 59.36 pounds per cubic foot. It is therefore evident that inasmuch as centrifugal force is proportional to the weights of the bodies in motion, the water will be thrown outward with $\frac{59.36}{.036}$ or 1562 times the force exerted upon the steam. In this head the steam passes up the interior pipes, is discharged tangentially close to the shell, and is thereby given a vigorous whirling motion. The entrained water—likewise the oil—flies outward, strikes the cool side, and trickles down to the outlet at the bottom. The steam, now perfectly dry, finds ready

THE STURTEVANT EXHAUST HEAD.

escape through the central opening above. These heads are built in sizes to fit pipes from 1 inch to 20 inches. All sizes above 10 inches are flanged instead of tapped.

The American Nickeloid Company.

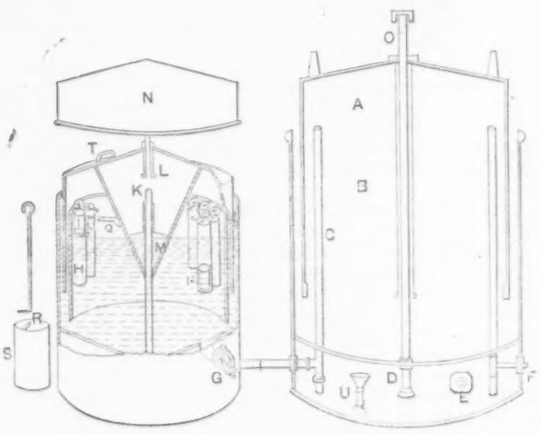
A new sheet metal is now being manufactured in this country by the American Nickeloid Company, Peru, Ill., and is being placed on the market under the trade-mark name of Nickeloid. It has for some time been in use in Europe. The company have within the past year located their factory at Peru, Ill., so as to be in close proximity to the manufacturers of sheet zinc. Nickeloid is a sheet metal produced by nickelizing zinc, combining sheet zinc with pure nickel by a special process which transforms the base metal and produces an article of greater tensile strength. This new alloy is particularly noted for its luminous brightness and permanent luster and possesses advantages over sheet brass or copper for an endless variety of purposes. The metal is not simply nickel-plated sheet zinc, but is such a union of zinc and nickel that the sheets can be stamped or bent to the sharpest turns without breaking or any injury to the finish. This greatly enhances its value to manufacturers of sheet metal goods, as many articles can at one process be made from Nickeloid, the edge produced in cutting being the same as the surface of the metal, thus rendering unnecessary the additional costly process of plating which is required with sheet brass or copper. The metal is claimed to be absolutely non-corrosive, and neither oxidizes nor tarnishes. It is furnished in sheets of the usual zinc sizes and gauges. It is offered by the company for use in making reflectors, linings for refrigerators, trays of all kinds, showcases, advertising signs, name plates, ornaments and an endless variety of trimmings and small goods for which a bright and tough metal is required. Being produced from zinc with a small percentage of nickel, it can be sold very much cheaper than sheet brass or copper. It has been used with success in the manufacture of wash boards and stove boards.

The Abner Acetylene Generator.

Henry Giessel & Co., 43 Franklin street, Chicago, have brought out the Abner acetylene generator. It works on the principle of plunging the carbide instantly beneath the surface of the water, so that the action is uniform and complete, the decomposition of a given quantity of carbide taking place without any intermitting action. The completeness of its arrangement is shown by the fact that the exact number of pounds of carbide contained in the generator can be ascertained at any time without opening the generator, while the number of cubic feet of gas is seen at a glance. The generator can be replenished when a part of the carbide has been used without wasting the unused carbide contained therein. It uses carbide in all conditions, whether lump or dust, and the claim is made that the perfect decomposition secured prevents the production of by-products, such as coal tar, ammonia, paraffine, &c., which are sometimes the annoying accompaniments of acetylene generation. It is stated that the construction is such the generator cannot be overcharged; no gas is generated after the lights are turned out; there are no gas valves and therefore no mistakes can occur by their wrong use; and all heat is eliminated in the production of gas.

In the accompanying drawing A represents the gas holder, B the water tank, C the pipe from the generator, D the drip chamber, G the gate to draw off the residuum, H the generator cells, I the carbide cups in position, S a cup enlarged, K the automatic seal with its guide L, E the service pipe, and N the generator cover.

From a report on a test of this generator made by the Underwriters' Bureau of Fire Protection Engineering,



THE ABNER ACETYLENE GENERATOR.

Chicago, approving its use, the following description of the apparatus is taken:

The machine is of the drop type. The carbide cups (shown in position at I and enlarged at S) and charges have been properly proportioned to reduce sudden pressure where dust is used. A vertical feed shaft is provided in the generator and arranged to obviate the use of a stuffing box. The revolving cover has been arranged so that it can be replaced but in one position, thus reducing the liability of missing any of the charges. Under the gas holder is a condensing chamber for removing the moisture from the piping automatically, without the use of valves.

The generating chamber of the 10-light machine is cylindrical, 19 inches in diameter, and contains a series of vertical wells or pockets arranged in a circle about 16 inches in diameter and concentric with the outer generator shell. A water seal chamber 1½ inches wide is thus provided between the outer shell and band which supports the wells. These wells are about 11 inches long and extend down into the water about 6 inches. The carbide charges of ½ pound each are contained in small cylindrical cups 4 inches high by 2 inches in diameter, which are supported in the wells by small catches or triggers, J. These catches are tipped successively by a lug, Q, fastened to a central chamber attached to the revolving cover. The lip of the cover is submerged in the outer seal chamber, and the entire seal cover is revolved by a central vertical shaft which passes up from the bottom through a sleeve and engages with a socket in the top of the cover. This obviates the use of any stuffing box, and a specially constructed trap on the seal cover obviates the necessity of a valve in removing the cover. The gas holder A for this size is 39 inches high over all by 23¾ inches diameter, constructed of galvanized iron. The bell is 25½ inches high by 22½ inches in diameter and is provided with center guide and automatic blow off having exhaust holes 9 inches above the lower edge of bell. The condensation chamber is located under the gas holder and is provided with drip connections from the inlet and service pipes and also from the blow-off for removing moisture. Automatic overflow is provided on the side and all gas valves opening into the room are obviated. The feed mechanism is located between the generator and holder, inclosed by removable panels. The feed is controlled by the vertical rod attached to bell and which rotates the generator cover by means of suitable ratchet and miter gears under the generator. The gas pressure under the cover tends to remove the weight from the gears and reduces friction. The tap G on the side is provided to remove the residuum, and the gravity drop prevents accidental opening. Back flow of gas from holder when generator is opened is prevented by a small water seal on the gas connection.

This generator is made in five sizes, to operate from 10 to 50 lights.

Case Hardening.

John Buckley has presented at the last convention of the National Railroad Master Blacksmiths' Association the following paper:

The process of case hardening has not changed materially for the past few years. The principal materials used remain the same: Granulated rawbone, hydro-carbonated bone black, black oxide of magnesia, sal soda, charcoal and salt. These materials are commonly used in railroad shops and give much satisfaction if they are carefully and properly handled.

For pins and bushings, and such light work as is required for immediate use, we use the New York Specialty case hardening powder; this we found to be greatly superior to potash.

The work which is to be hardened can be packed in cast or wrought iron boxes, sealing with fire clay or mud, so as to prevent the gases from escaping as much as possible. The pieces to be hardened should be placed about 2 inches apart in the box. The vacant spaces are well filled and packed with the material you are using for case hardening purposes. Should your box be supplied with heavy work, as crank pins, guides, &c., 15 to 20 hours of steady heat is necessary in order to secure best results. If, on the other hand, you have light pieces, as links, link blocks and pins, eight to ten hours will be sufficient to subject them to a good heat.

This class of work we place in the furnace about 8 o'clock in the morning and heat it all day. At night we close up the furnace, letting the box remain over night and remove next morning. Reheat this work and cool in cold water. We have secured good results using granulated rawbone. If using hydro-carbonated bone black pack the pieces in a box and seal as before.

Furnaces for case hardening should be so constructed that the boxes will not have to be raised or lowered while being put into or taken from the furnace. The heating space is near the ground. The fire box and ash pan are below the surface. This refers to a furnace heated with soft coal. If the furnace is outside of a building, a stack or chimney, about 16 feet high, will furnish draft enough to heat the boxes without aid of a blast. Case hardening furnaces which are heated with fuel oil are of a very different construction, the boxes being generally heated from the top; with coal, in most cases, it is from the bottom. The cooling tub is arranged so as to admit cold water from the end near the bottom, the cold stream thus running lengthwise along the bottom of the tub. This cold stream forces the hot water to flow over the top of the tub.

When cooling guides or long pieces, strips or bars of iron should be laid in the bottom of the tub, in order to keep the work about 2 or 3 inches from the bottom of the tub; in this way the cold stream flows under the work which is being cooled.

The exports of manufactured products from the United States in August surpassed all previous records, except that of March, 1899, when the value of such exports was $36,025,733. The value of the August exports was $34,158,777, as against $29,932,034 in July, 1899, and $25,805,485 in August, 1898. The figures of the first eight months of the calendar year, ending with August 31, 1899, show a total of $246,228,916, as compared with $201,444,606 for the corresponding period of 1898. If the average is kept up in the remaining months of this year, the manufacturing exports of 1899 will reach the total value of $370,000,000, or $62,000,000 in excess of 1898. The greatest gain in August, 1899, over 1898 is shown in agricultural implements, copper, cotton cloth, steel wire, hardware, metal working machinery, pumps, iron pipes and fittings, and miscellaneous machinery.

Archer Brown on the Outlook.

Archer Brown of Rogers, Brown & Co., New York, has contributed to the current issue of the *Engineering Magazine* an article entitled "The Outlook in American Iron Industry," in which he reviews the recent history of the industry and deals with the question "Will it last?" saying:

Frankly, it must be admitted no man knows. It is not given to mortals to unlock the future. War, famine, pestilence, Bryanism, may intervene and upset all calculations. But the wise man faces the facts as they are before him, and builds his judgment on these, discarding optimism, pessimism, preconceived theories, and even tradition. There were never better settled or apparently sounder commercial traditions in the past than that $1 wheat, 10 cent cotton and $10 pig iron (at Birmingham) marked the bottom limits in great staples; but we became familiar with values scarcely more than half these, and men lived and prospered.

The simplest and largest fact in the present situation is a demand greater than the supply. What makes the demand? What limits the supply? The demand is great because seventy millions of people have pinched and economized for six or eight years, and are now quite able to buy, and what is of more consequence, are in a mood to buy. They have made the old stove answer, worn out the harvester and threshing machine, postponed the building of the county bridge, got along with the old stationary engine or lathe, put off the purchase of needed rolling stock for the railroad, hesitated to try conclusions with England in the building of ships, and generally have waited for the return of what is known as "good times." Now they want to replenish, from the sad-iron to the locomotive. Will they stop because prices advance? No, they will not. Here enters the element of human nature. Confidence breeds confidence. Distrust feeds on itself. Two years ago the great railroads of the United States could have renewed much needed equipment at about half the cost that to-day they do not hesitate to pay. Did they do it? It is notorious that the richest hesitated most. An amusing illustration is the case of a master mechanic of a great road whose requisitions underwent the usual cutting in two in the middle when they reached the management. Among the track and shop supplies needed was a large belt for an engine. When it came it had suffered the usual pruning, and was just half long enough to reach. The writer will not soon forget an effort, in the summer of 1897, to find a buyer in New York for 100,000 tons of Alabama pig iron which a large interest was willing to close out at $6 a gross ton, duly stored in a warrant yard—a price unprecedented in the history of the world. Not one of the great banking houses of capitalists dare face the perils connected with such a proposition, though money was ruling at 3 per cent., and nearly free storage on the material was guaranteed. To-day almost any bank in New York would lend $15 a ton on it, and scarcely ask a question.

Buying, therefore, will not stop because prices are up. The railroads must have enormous additions to equipment, or lose the great harvest of profitable traffic. The millions of farmers will buy their agricultural machinery, stoves, carriages, and pianos because crops have been good for three years, fetch good prices, the mortgages are paid off, and there is money in bank. Electrical equipment will not stop while street railways and lighting companies make large earnings merely because dynamos and rails are dearer. Cities and towns will put in needed water and gas pipe without much regard to whether the cost is $18 or $28 a ton.

It is perfectly true that some new enterprises, that otherwise would take shape, are deferred because cost is found to exceed engineers' estimates. But this builds a reserve demand that will come in to support the market in the future. In high steel buildings, in large cities, for example, there is a distinct limit to prices that may be paid for materials without bringing the cost to a point beyond earning ability. The merchant marine cannot be built up as rapidly from American shipyards on $28 steel as on $16 steel. But these are but eddies in the main current.

The real factor in lowering prices will be increased production, not diminished demand. How fast can the output of the furnaces be increased? I say not over 15 to 18 per cent. per annum. There was incredulity in as high quarters as Mr. Swank, secretary of the American Iron & Steel Association, when this prediction was made early in the year. For were there not a couple of hundred idle blast furnaces in the country ready to blow in the moment profitable prices were reached? Would American capital or energy hesitate where the reward was so great?

The easy theory, therefore, that production can be turned on, as from a faucet, when profits are high, does not fit the facts. It is needless to say that every nerve will be strained to get into operation at the earliest moment the few existing idle plants, but those who base their calculations on an increase of not over 12 to 15 per cent. per annum in the next two or three years will not go far astray.

It has not escaped notice that in all the present excitement little is heard of organizing companies to build new plants. Each of the great consolidations is planning additions to capacity, but there are few schemes to develop idle property, as was the case about 1890. There are reasons for this. The building of furnaces to sell town lots was generally disastrous. The impression is still abroad that there is a large reserve idle capacity. But the main factor in restraint is that under present conditions it would require at least a year and a half to build a good modern plant; the cost would be 50 per cent. greater than a year ago—and who knows where iron would be when the furnace was ready to start? The wisdom of the policy of building and enlarging in the bad times, followed for many years by Krupp and Carnegie, is demonstrated in a period like this.

What of the export trade? It is generally believed that this new factor is the all-important one in sustaining American markets. Taking the iron and steel manufacture as a whole, I believe this to be true. But so far as ores, pig iron, and even steel billets are concerned, the movement has never reached 5 per cent. of the product of the United States, and probably will not for years to come. Radical changes in the freight and labor situations must occur before America can capture English and European markets with crude iron. She is shipping liberally, it is true, and will continue to ship, for prices in Europe will always be regulated pretty closely by those in the United States.

But it is in the finished forms where American victories will be won, as they are now being won, in locomotives, wood and iron working machinery, agricultural machinery, nails, wire, bicycles and a hundred other lines, American inventive genius, great productive capacity, modernized plants, superior business organization, etc., will maintain and doubtless increase the great total of $80,000,000 reached last year in her iron and steel exports. The effect of this great and growing foreign demand is sensibly felt in every department of the trade.

The belief is widespread that exports from the United States must suffer a sharp check, if not come to a full stop, unless prices in America recede. This is a natural, but not well grounded, view. It assumes that the markets of the rest of the world go their way irrespective of what the United States does. That was formerly the case, but it is so no longer. The world is now knit closely together in its industrial and commercial as well as its financial fabric. Influences that affect one nation are soon felt by the others. England and Germany were in the midst of industrial prosperity two years before it was felt in America, but now that she has responded the added stimulus is felt over there. We think it phenomenal that the mills and furnaces throughout the United States should have their product booked half through next year, but in Germany and Belgium they are already booked all through the year 1900. The great Krupp works at Essen, employing 30,000 men, are filled with orders until 1901. Germany has nearly overtaken Great Britain in pig iron product, but is nevertheless importing largely from both England and America to supply her deficiency. Great Britain shows a slackening in her shipbuilding industry, but her export trade in iron is again growing and all her lesser industries are exceedingly active. Prices of iron and steel have risen there almost as rapidly as in the United States. Middlesboro pig, that sold last year for 43 shillings, has reached 75 shillings and is now a little under 70.

The fact is the great industrial awakening is worldwide. China, India, South Africa, the Philippines, Japan, Russia, and the new island possessions nearer to the United States are full of projects for improvement. They have caught the renaissance spirit. The beginnings are small, but they suggest immense future possibilities. They want steam railways, electric lines, electric lighting, water works, locomotives, machinery, bridges, &c., and it scarcely seems probable that, having felt some of the benefits of modern progress, they will decide to turn back. America has shown her ability to compete with the other industrial nations for this trade, and will continue to get it in increasing quantity.

A word as to the new level of prices. It is too high, of course, to be permanently maintained. It is too high for the lasting good of this great industry. But we must not be misled by making false comparisons. The conditions reached in the lean years following the panic were abnormal, not natural. Iron was forced to $6 a ton at Birmingham on wages of 90 cents a day for 12 hours' work; on transportation rates that did not return the railroads' cost; and on destruction of royalties, or values of the

ore and coal in the ground. The same was practically true in the Lake Superior district. It was simply a struggle for life. Values of great properties shrunk from millions to hundreds of thousands. Labor and capital fled to other fields. America learned great and valuable lessons during this trying experience, among others, how to produce iron more cheaply than has ever been done in the history of the world. Perhaps in the end the experience may prove to have been a blessing. But we must not make the error of supposing that those were normal conditions, and that when we have escaped from them we are on an artificial basis. A sound view is that we are nearer normal conditions to-day than we were when 100,000 tons of $6 pig iron went begging for a buyer in New York. A cent a pound for the best pig iron in the world should not, after all, paralyze the faculties of reasonable persons.

It should not be forgotten that the cost of iron resolves itself substantially into three things: labor, transportation and royalties, or the value of the material in the ground. Labor, the largest item, is up 25 to 40 per cent. in iron making. It is not yet too high for the good of the country. Transportation is up about as much, but who shall say the stockholders of the railroads and steamship lines are not entitled to a few dividends after years of waiting? It is now possible to credit ore and coal mines with something for the materials in the ground. But is it a violent assumption that the great iron and coal deposits of the United States, which are usually counted the foundation of wealth in an industrial nation, are actually worth something and should return a profit to their owners on material mined out? If these points are conceded, the legitimate cost of pig iron in the United States is at least 33 per cent. above the low level to which it was forced in the years from 1895 to 1898. The manufacturer's profit, if any, must be added to this. It is some satisfaction to know also that cost is rising proportionately in other parts of the world. In Great Britain and Germany the increase varies from $2 to $4 per ton, according to kind of metal and locality where it is made. This is due mainly to the steady rise in the price of coke, although ores have advanced and are in short supply.

Cautious investors as well as manufacturers quite naturally look forward to the time when collapse will again take the place of boom, and prices will drop below cost of production. Who shall stand against that day? The strong, who expect to survive, are taking extraordinary measures to equip themselves for whatever may happen. The huge consolidations—at least those newly organized—are free from bonded debts, with large provisions for working capital. Some of them, indeed, are lenders of money in the street. Nearly all have strengthened themselves by ownership of ore mines, coal mines, coke ovens and even transportation lines, so that they are independent "from the ground up." If the time ever again comes for a fight for existence, it will be between giants, indeed, and no other nation can resist American inroads. But every observing man has noted, in the instructive years of the past decade, the wonderful tenacity of life of small plants well located and economically managed. Another thing that has not escaped notice is that in the "survival" struggle there is a marked tendency to equalize conditions in all the different districts. It is a fact capable of demonstration that the best returns on capital during the lean years were not from the great concerns in the most favored locations (barring one or two exceptions), but from certain smaller operations located in districts not usually spoken of as the cheap centers of production. It is a safe assumption, therefore, that, whatever lengths the consolidation movement may extend to, there will be plenty of strong undertakings on the outside that will keep the industry on the sound footing of free competition.

Electric Fountains at Crystal Palace.—The London *Standard* of July 28, 1899, and the London *Daily Telegraph* of July 27, 1899, contain a detailed description of the three electric fountains started at the Crystal Palace, Sydenham, London. It would appear from these descriptions that the fountains are drawing enormous crowds to that already popular resort, as, although electric fountains have been known for some time in this country, this is the first attempt of anything of the kind in London. The fountains were designed and erected by Mr. F. E. Darlington, Philadelphia, Pa., and water is supplied to them by two vertical triplex power pumps built by the Goulds Mfg. Company, Seneca Falls, N. Y. These pumps are operated by electric motors and the whole outfit is so simple that it is practically controlled by merely touching a button. The installation of these electric fountains represents a first expenditure of about £15,000. In addition to this extensive improvements in other directions have been made, the whole improvements costing about £90,000.

Influence of the By-Products of Charcoal Manufacture on the Charcoal Pig Iron Industry.

The following interesting article is from the pen of H. O. Chute of Cleveland, Ohio, chemical engineer, who has for years been connected with charcoal iron furnaces and for the past four years has been engaged in the by-product industry as superintendent of the Southern Chemical Company's plant at Yuma, Mich.; also of the Standard Chemical Company of Toronto, and recently built the retort works at Fenelon Falls and Deseronto, Canada, which supply the Deseronto Furnace Company with fuel.

The dependence of one industry on another which may be seemingly widely different is nowhere better shown than in the present relation of the charcoal iron industry to the manufacture of chemicals which are the by-products of wood carbonization.

At the present time there are in the United States and Canada a number of plants which carbonize wood, and, by condensing the smoke resulting therefrom, produce wood alcohol, acetate of lime (brown or gray) and creosote oils. These plants produce the major portion of the charcoal now consumed in blast furnaces. There are two processes in use with several modifications of each, but the two great classes may be distinguished as the kiln process and the retort process. The kiln process has for its main object the production of charcoal and the by-products are incidental. These plants are located usually with primary reference to the supply of the furnaces. The retort process has for its object the production of chemicals and charcoal is really the by-product. These plants are located with special reference to the ease of manufacture of the chemicals, and the disposal of the charcoal has been a secondary consideration.

As it is with all other industries, the present status of the charcoal iron manufacture is the result of evolution, and this evolution is not so much the result of foresight as of a survival of the fittest. In the earlier days, as a rule, the furnaces were run by water power. The coal was made in pits in the woods and hauled by wagon to the furnaces. These furnaces usually had small capacity and their life was limited by the exhaustion of the timber immediately surrounding them. This condition may be considered as pre-historic, as more modern methods and conditions have entirely superseded them. The plants were usually located near the iron mines, as the ore was the largest freight item.

The next step in advance was the location of permanent kilns at a distance from the furnace, usually in small plants, receiving their wood supply directly from wagons. In this stage more attention was paid to getting nearer the supply of fuel. There are to-day many furnaces which are located with this idea uppermost, these being located in the southern part of Michigan, where the timber was being cut to prepare the land for agriculture. Detroit at one time was probably the best located, and, while these conditions lasted, undoubtedly was the best location for the manufacture of Lake Superior charcoal pig iron. As the major portion of charcoal pig iron must be consumed at a long distance from the source of the iron ore, and as the freight on a ton of pig iron and on the ore required to make that ton of pig iron is about equal, any location on the direct road between the source of supply and the market would have equal advantages, so far as the ore was concerned. If at some point on this journey there is a source of fuel supply this is undoubtedly the best position for the location of the furnace. This development was along the same lines as those found most profitable in the coke pig iron industry—that is, it was found to be cheaper to take the ore to the fuel than to bring the fuel to the ore.

Owing to the fact that the capacity of the furnaces was constantly increased it was soon found that isolated fuel plants quickly exhausted the timber, and it became more profitable to put the plants into larger groups located at points where the facilities for gathering the wood together, either by water or rail, were the best, and this stage of the evolution made possible the recovery of the by-products from the larger plants. At this stage nearly all of the plants originally located with reference to the ore were abandoned in favor of those which had better facilities for getting the fuel.

The first attempts on the part of the Lake Superior charcoal iron workers to recover the by-products by the retort process resulted disastrously. This has been stated as due to various causes, but it is a fact that while this process had been running successfully for years in the Eastern States none of the projectors of this enterprise in the West ever considered it worth while to visit the East and discover what was being done, nor did they adopt the system there used or import any of the skilled laborers.

Owing to the efforts of Dr. Pierce of Buffalo, however, the kiln process was established on a working basis, and various plants of this kind have been at work since, and it is the process exclusively used at the present day in the West. These chemical plants were not in all cases owned by the furnace companies, nor even by the parties who made the coal, but in the struggle for existence the profits of one business were shared with the others, as they were so interdependent. Several furnaces now have all their kilns located at the furnace and make the by-products on a large scale. Not only did the kiln by-product process furnish charcoal, but the retorts of the East became an important factor in supplying the furnaces of lower Michigan, and although the forests in the immediate vicinity of the latter have long ago been exhausted, and there is a high freight rate on the retort coal used, yet these furnaces continue successfully and at present use retort coal almost exclusively. It will thus be seen that nearly all of the Lake Superior charcoal iron now made is produced in plants using charcoal from which the by-products have been recovered.

A recent development along this line is the removal of a Detroit furnace to Deseronto, Canada, it being self evident that it is easier to carry Lake Superior ores from the mines to Deseronto by water than to ship the charcoal by rail from Deseronto to Detroit and ship the pig iron back again into Canada, a custom which our Canadian cousins allowed to continue for many years. However, a liberal infusion of Yankee blood and spirit, combined with the praiseworthy energy of the Canadian promoters, succeeded in establishing a prosperous enterprise in the far East, which certainly verifies the statement that the ore must seek the fuel.

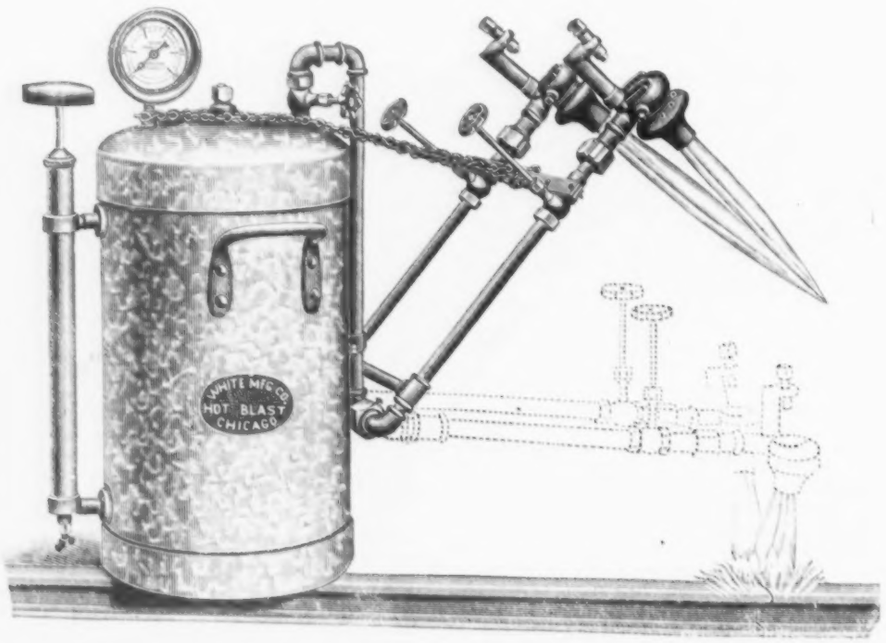
These are the only works of the kind having a retort system constructed with special reference to producing charcoal for the furnace, and their success gives hope for the future that this process may give further aid to this struggling industry by giving it cheaper fuel. The latest development, however, is the formation of a company to erect a furnace at Buffalo to use the surplus retort charcoal, which has hitherto been a burden to the producers and has been transported long distances to find a market. What effect this will have remains to be seen. It certainly means the elimination of a large amount of freight in bringing the fuel west as far as Michigan and in transporting the iron east for this market. So far as the supply of the eastern trade is concerned, this seems to be a very wise move on the part of the promoters of the enterprise.

The West still has cheaper wood in spite of the fact that there has disappeared from the market all that supply which in early days was sacrificed to allow of the clearing of the lands for agricultural purposes and that the larger bodies of hard wood have been already consumed in manufacturing charcoal. Recent developments in hard wood lumber manufacturing, while making the timber too valuable for making charcoal, will at the same time produce a vast amount of second class wood which is useless for any other purpose and gives promise of being a source of charcoal supply in the future.

What the future has in store for this industry is only a matter of prophecy, although conditions are changing, and while the past generations have had resources which if available at present would be valuable, it yet remains a fact that the timber resources of the United States are greater than those of Sweden, which has been long famed for its charcoal iron and its steel, for which wood fuel is used and which has made a superior and world renowned product; and it would seem that, by applying ourselves to the subject as industriously as have our Swedish brethren, we might at least produce what we now import from them at considerable expense.

The White Hot Blast Railway Joint Heater.

The apparatus herewith illustrated has been brought out by the White Mfg. Company, 158 Indiana street, Chicago, for heating rails in tracks so that melted iron or steel can be poured in the joints and thus make a continuous rail. This is being done by many of the leading street car lines in the country, and various heating devices have been in use for the purpose, but it is a matter of considerable difficulty to secure a sufficiently high heat with those usually employed. This hot blast heater is intended to be used with kerosene oil, and the manufacturers claim that it will heat to 2500 degrees in five minutes after application to the rail. Two burners are used which are attached to the tank by a swivel joint, and so arranged that the flames of both burners can be concentrated on one point. The illustration shows how the burners can be adjusted to different positions. One flame, or both, can be used as desired. These burners are a slight modification of the White kerosene burner which has been used in their brazers and other devices of this class. The tank is made of No. 12 galvanized steel, with brazed joints, calculated to stand 500 pounds pressure to the square inch, and will hold 10 gallons of oil. Handles on the side enable it to be easily carried from one place to another. This heater is being used by the Falk Mfg. Company and the Milwaukee Railway Joint Company, both of Milwaukee, Wis., who are engaged in the work of making continuous rails.



THE WHITE HOT BLAST RAILWAY JOINT HEATER.

The Niagara Falls Power Company will soon build a new power transmission line from their central station at Niagara Falls to North Tonawanda and later to Lockport. Next summer it will be extended to Buffalo also. The present transmission line will then be used solely for the Buffalo service. As it is now, power is taken from it to North Tonawanda and Lockport. Between Niagara Falls and North Tonawanda the new line will follow the company's right of way, which is 30 feet wide.

The Franco-American Treaty Schedules.

WASHINGTON, D. C., October 3, 1899.—Many inquiries have reached the State and Treasury Departments with regard to the status of the Franco-American reciprocity treaty which was discussed at some length in these dispatches to *The Iron Age* a fortnight ago. Several manufacturers have written to learn the character and extent of the concessions from the regular French duties which are made by the treaty upon machinery and other finished metal products. The general provisions of the treaty concerning the maximum and minimum rates of duty on the principal metals were presented in these dispatches, but for the information of manufacturers the correspondent of *The Iron Age* has secured the text of the schedules covering machines and machinery, tools, arms, &c., the details of which are given below. Under the terms of the treaty, which will be presented to Congress for ratification in December, all the products in these schedules which are enumerated will be entitled to the minimum rate, which will put American manufacturers on an equal footing in the French markets with Great Britain and Germany. It will be noted that the treaty makes two or three important exceptions, which are given in detail, covering machine tools, on all of which the maximum tariff will be exacted when the goods are imported from the United States. Following is the text of the schedules under which American products will enjoy the minimum rates specified:

MACHINES AND MACHINERY.

	Duties per 100 kg. Maximum. Francs.	Minimum. Francs.
Steam and other engines:		
Steam engines, stationary and marine, without boilers; steam pumps; gas, petroleum, hot air, and compressed air engines, weighing:		
250 kg. and more	18	12
Less than 250 kg	30	20
Steam engines, demi-fixed or portable, including boilers	17	13
Locomotives; traction engines:		
Ordinary gauge	20	15
Narrow gauge	24	18
Hydraulic engines, wheel and piston; turbines; pumps; ventilators, weighing:		
250 kg. and more	15	15
Less than 250 kg	25	25
More than 3000 kg:		
Containing at least 50 per cent. of cast iron	8	8
Containing less than 50 per cent. of cast iron	10	10
From 250 to 3000 kg	10	10
Less than 250 kg	15	15
Tenders for locomotives:		
Ordinary gauge	15	10
Narrow gauge	18	12
General machinery: Transmission gearing; balances; scales; fixed railway stock; signals; presses, lifting apparatus, &c.; apparatus not mentioned, driven by mechanical force	15	10
Boilers, steam:		
Of steel or iron plate, sectional or not, with feed water heaters and internal furnaces, without tubes	12	9
Of steel or iron plate, tubular or semi-tubular —*i.e.*, fitted with tubes of iron, steel, copper or brass	18	14
Parts of multitubular boilers, composed chiefly of iron or steel tubes, fitted or not	24	18
Open boilers; gasometers; recipients; stoves and caloriferes of sheet iron or steel, or of cast iron combined with sheet iron or steel	12	8
Sugar machinery; heating apparatus, for breweries, distilleries, perfumeries, pharmacies, kitchens, the copper or bronze predominating in weight, weighing:		
250 kg. and more	30	20
Less than 250 kg	50	40
Refrigerating apparatus, weighing:		
250 kg. and more	20	14
Less than 250 kg	30	25
Detached pieces of cast and wrought iron or of steel, other than parts of steam boilers:		
Of cast iron, turned, filed or adjusted, weighing:		
1000 kg. and more	18	12
From 200 to 1000 kg	20	15
Less than 200 kg	25	20
Of wrought iron or of wrought or cast steel, bored, turned, filed or adjusted, weighing:		
300 kg. and more	20	12
From 100 to 300 kg	25	15
Less than 100 but more than 1 kg	40	25
1 kg. or less	50	35
Springs of wrought steel, for carriages, railway carriages and locomotives, not polished	18	12
Detached pieces, rough or wrought, of pure copper or of copper alloyed with any metal, cast in molds (brasses, cocks, &c.), weighing:		
10 kg. and above:		
Rough	25	15
Wrought	30	25
Below 10 kg.:		
Rough	20	15
Wrought	50	40
Detached pieces of two or more metals, such as cast iron, wrought iron, steel and copper, pure or alloyed with any other metal (cocks, brasses, &c.), weighing:		
300 kg. and more	20	15
From 50 to 300 kg	30	20
Less than 50 kg	40	30

VARIOUS METAL WARES.

Tools, with or without handles:		
Of pure iron	18	12
Of steel, or of iron tipped with steel	27	22
Of copper	35	30
Wire gauze:		
Of iron or steel:		
Of wire exceeding 2 mm. in diameter	12	8
Of wire exceeding 1 mm. and up to 2 mm. in diameter	16	11
Of wire exceeding 5-10 mm. and up to 1 mm. in diameter	20	13
Of wire less than 5-10 mm. in diameter	30	21
Of copper or brass:		
Ordinary	30	20
For paper machines, for gauze, weighing:		
More than 500 grams per square meter.	60	40
500 grams per square meter or less	150	100
Wire netting of iron or steel:		
With meshes of 25 mm. and above	15	10
With meshes of less than 25 mm.	18	12
Perforated sheets, of iron, steel, copper, brass, zinc and other metals, with at least 500 holes per square meter	As solid sheets of the corresponding metal, with an addition of 10 francs per 100 kg.	
Cutlery:		
Common:		
Tailors' scissors and pruning shears	30	20
Kitchen and butchers' knives	125	100
Razors, common	250	200
Other	600	480
Statues of metal, of a natural size or larger	Duty of the metal employed.	
Articles of cast iron:		
Neither turned nor polished:		
Railway chairs, plates or other castings from the open mold	3	2 50
Straight cylindrical pipes, beams and columns, solid or hollow, gas retorts, solid bars and sets thereof, grates and hearth plates, and other similar rough castings	4	3 50
Iron castings for machinery or for ornament, weighing:		
More than 50 kg. each	6	4
From 5 to 50 kg	7	5
Less than 5 kg	8	6
Pots, kitchen utensils, and other articles not entering in the three preceding numbers	5	4
Tinned, enameled, varnished, or rendered inoxidizable	15	10
Rough articles of malleable cast iron, of wrought iron and cast steel, weighing:		
More than 3 kg	12	8
From 1 to 3 kg	20	15
1 kg. and less	25	18
Articles of iron and steel:		
Iron wares:		
Buildings of iron or steel: Parts of fixed or movable bridges, frame work for buildings, &c., for sluice gates, for cranes, &c., for portable railways, and, in general, all objects composed of one or more pieces, bored or adjusted, or fitted together with rivets or bolts; each piece weighing at least 5 kg. per lineal meter	12	9
Small articles, not specified, of iron or steel, grating, barriers for level crossings, frames for marquees, for hothouses, for kiosks, verandas, fixed or movable frames, window frames, fitted or not, shutters of sheet iron for shops, and, in general, all objects composed of one or more pieces, bored or adjusted, or fitted together with rivets or bolts; each piece weighing less than 5 kg. per lineal meter	15	10
Iron work for carriages, and especially such as enters in the construction of railway rolling stock	15	10
Locksmiths' wares:		
Locks, padlocks; keys, iron bolts of all kinds, handles, hooks, hinges of iron or sheet iron, latches, slide bolts and all other articles of rough iron, scoured or not, turned, filed or polished, for furniture, doors and windows	20	15
The same articles, combined with copper or brass, or composed wholly of copper or brass	25	20
Anchors, cables and chains:		
Dredged up in harbors and roadsteads of France, under the conditions of the law of July 2, 1836	25	25
Other:		
Cables of iron or steel wire, barbed fence wire:		
Composed of wire of 5-10 mm. and more in diameter	15	11
Composed of wire of less than 5-10 mm. in diameter	30	21
Anchors, railway buffers, couplings and chain cables of iron or steel	12	8
Nails:		
For shoeing horses	20	15
Other, weighing:		
Large, more than 20 kg. per 1000	9	6
Medium size, more than 5 but not more than 20 kg. per 1000	13	9
Small, from 200 grams to 5 kg. per 1000	19	14
Very small, less than 200 grams per 1000	40	30
Wire nails of iron or steel, machine made, whether tinned, coppered, zinced or coal-tarred, or not:		
More than 2 mm. in diameter	15	8
From 1 to 2 mm. in diameter	20	11
1 mm. in diameter and less	35	24
Screws, eye-bolts and iron hooks, of any diameter, furnished with screw threads. Bolts, rivets and nuts of iron, of any diameter, polished, turned, varnished or coated with any preparation. Bolts, rivets and nuts of rough iron, as well as all kinds of bolts and screws not mentioned	20	14
Mechanical stoppers, consisting of a white or colored porcelain head and iron or steel wire,, with or without India rubber rings	35	25

Tubes of iron or steel:		
Not welded, of an inside diameter of:		
9 mm. and more	12	9
Less than 9 mm	21	14
Butt welded, of an inside diameter of:		
9 mm. and more	13	10
Less than 9 mm	24	18
Lap welded or doubled	24	18
Jointings of all kinds	24	18
Bored or not welded:		
Of an inside diameter of 10 mm. and more:		
Steel, soft	50	40
Steel, cast or tempered	100	80
Of soft, cast or tempered steel, of an inside diameter of:		
From 9 to 5 mm	225	200
From 5 to 2 mm	550	450
2 mm. and less	5,000	4.000
Household wares and other articles of iron, steel, or of black sheet iron, not mentioned:		
Neither painted, polished nor tinned	17	14
Painted and polished	21	16
Varnished	24	18
Enameled, plain, tinned	30	25
Enameled with fillets and ornaments, with or without gold fillets, printed in colors	40	35
Coffee mills, with stands of wood, or of cast or sheet iron.—Articles of domestic economy: Meat presses, meat cutters, fruit presses, small household pumps, &c.	20	16
Apparatus for water closets, lever or balance, water tanks for flushing the same.	17	13
Buckles for saddlery, fittings and accessories for harness, of iron, malleable cast iron, or cast steel	35	20
Articles of pure copper or of copper alloyed with zinc or tin:		
Coppersmiths' wares, including needles of copper (other than knitting), and tubes of all kinds, of pure copper, or of copper alloyed with any other metal	30	20
Objects of art and ornament:		
Enamels inlaid with metal lines	60	40
Bronze	60	40
Lamp makers' and tinsmiths' wares, made up of different metals and combined with copper, pure or alloyed, burnished, polished, varnished	60	45
Other articles not mentioned	50	40
Lead pipes, and all other manufactures of lead.	4	3
Electric accumulators	17	13
Tin pots and other manufactures of tin, pure or alloyed with antimony	40	30
Zinc manufactures of all kinds:		
Common, plain or stamped	12	8
Varnished, polished and nickeled, including those for lamps	30	20
Printed in colors, ornamented and gilt	50	40
Articles of nickel, alloyed with copper or zinc (German silver), or of nickeled metals	150	100
ARMS, POWDER AND AMMUNITION.		
Arms of war, regulation, portable, and arms of war employed abroad (rifles and carbines)	600	500
Arms of commerce:		
Side arms	50	40
Fire-arms:		
Sporting guns, muzzle loaders	300	240
Sporting guns, breech loaders:		
Pin-fire	450	350
Central fire:		
With hammers	900	800
Hammerless, as well as all guns not included in the above categories	1,200	1,000
Rook rifles, pistols, revolvers, walking stick guns	600	500
Gun barrels and parts of arms, in the rough	75	60
Parts fitted together, other than in the rough, such as gun barrels, with fittings, locks and trigger guards	Pay as the arms to which such pieces belong.	
Loose parts, other than those in the rough	1,200	1,000
Guns and gun carriages:		
Of bronze or copper	As articles of bronze or copper.	
Of steel	As articles of steel.	
Of cast iron	As articles of cast iron.	
Of iron	As articles of iron.	
Of wood	As articles of wood, not otherwise mentioned.	
Gunpowder	Prohibited.	
Dynamite	50	50
Percussion caps:		
For warlike purposes	Prohibited.	
For sporting purposes, including caps or detonators for mines	80	75
Cartridges:		
For warlike purposes:		
Loaded	Prohibited.	
Empty	80	75
For rifle clubs	50	43
For sporting purposes:		
Loaded	Prohibited.	
Empty (with caps or not)	80	75
Projectiles	As articles of metal, according to kind.	
Miners' fuses:		
Ordinary	35	30
Tape	50	45
Gutta-percha	80	75
Fireworks	125	100

On machine tools of American origin the maximum tariff as given below will be levied:

Heavy, weighing more than 1,000 kg	15	10
Medium, weighing 250 to 1,000 kg	20	16
Small and of precision, weighing less than 250 kg.	70	50

A new point of special interest has been advanced on behalf of the contention that Germany, Great Britain, Italy, &c., will be enabled upon the ratification of the Franco-American treaty to demand the same low rates of duty for their products as are conceded by the products of France. It is now stated in semi-official quarters that these countries are not prepared to make demands similar to those already made by Switzerland and conceded by this Government under the first Franco-American treaty of 1898. As recently stated in these dispatches, Switzerland secured this concession under the peculiar form of the "most favored nation" feature of the Swiss-American treaty of 1850, granting nothing in return. The leading nations, however, are in position, it is claimed, to demand concessions under the "most favored nation" clause as it is commonly found in treaties of amity, commerce and navigation, which provides that if either party to the treaty shall grant to any other nation any particular favor in navigation or commerce it shall immediately become common to the other party, "freely where it is freely granted, or in yielding the same compensation when the grant is conditional."

It is pointed out that Switzerland could not have secured a concession under this clause, as she was not in the position to "yield the same compensation" which France has yielded. Germany, however, is said to be in position not only to make reductions in duties equivalent to those made by France in the pending treaty, but also to afford an extensive market for similar classes of American products. It is an accepted principle of commercial diplomacy that the mere concession of a rate cannot be regarded as "compensation," unless the evidence is satisfactory that the consumption of the articles in question will be adequate to constitute a substantial advantage to the producer. It is held, therefore, that where a satisfactory market can be offered, in addition to similar reductions, the requirements of the "most favored nation" clause are met and can therefore be invoked to compel the United States to grant other nations the low duties provided in the Franco-American treaty. It is also contended that in the case of the Hawaiian treaty, previously referred to in these dispatches, the claim under it which was subsequently surrendered by Germany, France and England, was to the rights enjoyed by the United States without rendering of equivalent compensation, and it is held that had such compensation been offered the Hawaiian Government the nations referred to would have been in position to enforce their claims. At the State Department these contentions are being examined with considerable interest, but no disposition is shown to retreat from the position heretofore maintained, that no Power can claim under the "most favored nation" clause the concessions mutually arranged by reciprocity treaty between two countries for their own advantage. The question is such an important one, however, that there can be no doubt that it will figure largely in the consideration by Congress of the advisability of ratifying the pending treaty. W. L. C.

Progress and Future of Steam Navigation.

Sir William White, Chief Constructor of the British Navy, as president of the Mechanical Section of the British Association, at the recent meeting at Dover, England, summarized the progress made in steam navigation during the last 40 years, and indicated the possibilities and directions of further advances. Comparing the "Himalaya" of the P. and O. Company of date 1853 with the newer "Himalaya" of 1893, it could be seen, said Sir William, that in 40 years the length had been increased about 4 per cent., displacement trebled, horse-power quadrupled and speed increased about 50 per cent. Cargo steamers, no less than passenger steamers, had been equally affected. Vessels were now building for the Atlantic service to carry 12,000 to 13,000 tons dead weight, in addition to passengers, while possessing a sea speed as high as that of the swiftest mail steamers afloat in 1880.

Past experience in respect of the total resistance and the friction resistance of a moving vessel was against the possibilities of much greater increase of speed, to the extent, at any rate, of the sanguine schemes of 50 to 60 knots an hour. Further economies of weight compared with power were being produced by various devices, the most important being the use of higher steam pressures and greater rates of revolution, the use of rotary engines, of which Mr. Parsons' turbomotor in that remarkable vessel, the "Turbinia," was the leading example, the substitution of liquid fuel for coal and the use of stronger and lighter materials (as alloys of steel with nickel and alloys of aluminum) for the construction of the hulls. "In view of what has happened," said Sir William White, "and is still happening, it is practically certain that the dimensions of steamships have not yet attained a maximum."

The Carolina rice crop this year is the best on record, exceeding by 20 per cent. the record breaking yield of 1892.

Range Finders and Range Finding.

Accuracy in modern gunnery, both on land and sea, is very largely a question of range. Each of the old fashioned smooth bore and rifled cannon possessed certain individual idiosyncrasies which the gunner had to learn and humor before he could shoot true. But the manufacture of ordnance to-day is so precise an art that this "personal equation," as applied to the gun, is practically eliminated; each rifle may be counted on to place its projectile in substantially the same spot as others of the same length and calibre fired under the same conditions. Hence with a stationary modern gun and a stationary target a hit is almost a foregone conclusion if the range be known. The principal errors of practice in firing from fortifications against ships may be said to occur either from miscalculation of the distance of windage, or of the speed and course of the ship. In naval gunnery, obviously, the skill of the man at the gun is a more important factor than in shore practice, owing to the instability of the ship, as a gun platform, at sea.

The expensive ammunition and long range of the artillery of the present has made accurate determination of the distance of a remote enemy of more importance than in the past. The means for estimating distance holds therefore a prominent place among instruments of modern warfare.

Distance may be estimated in several ways. One of these is by trial shots with a quick firing gun of small caliber. Knowing the exact range of each gun in a battery or ship the precise range of the target may be found after two or three shots. Writers on naval gunnery have condemned this practice as unprofessional and slipshod. Nevertheless it is resorted to as certain, though wasteful of expensive ammunition, particularly when the ranges are continually changing as in a running sea fight.

Another method is based on the known velocity of sound, but is only roughly approximate. The time elapsed between the flash of the enemy's first gun and its report, if multiplied by the speed of sound waves in air, will give his distance. At sea a pistol shot may be fired, or a bell sounded, and the exact time required for the return of the sound waves reflected from the hostile ship carefully noted. The temperature and pressure of the atmosphere being known, the distance may be determined by the simple multiplication of half the number of seconds elapsed by the speed of sound in air for the given temperature and pressure. Instruments have been invented for assisting in the determination of distance by this method comprising a stop-chronometer, a barometer, thermometer, and a microphone receiver to magnify the echo returned from the distant ship.

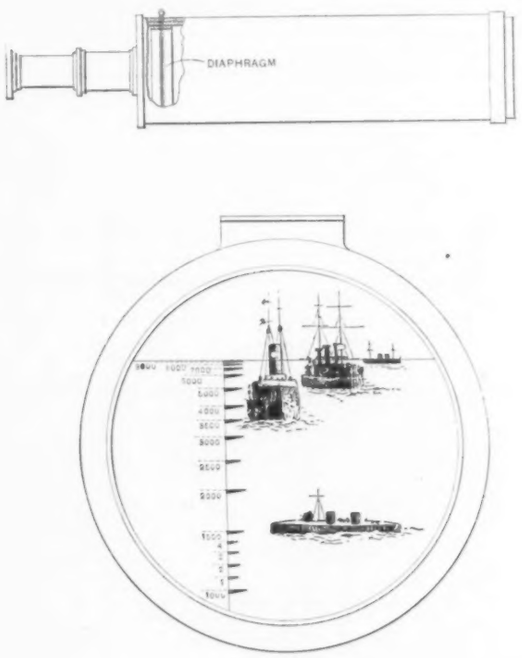


Fig. 1.—Diaphragm for Determining Distance.

Use of Range Finders.

Much was heard about range finders during the late war with Spain. On the American side free use was made of them. It may be recalled that the only victim of the battle of Santiago was killed while in the act of determining the distance of the "Colon" from the "Brooklyn." Aside from the acoustical distance measuring implements, a range finder, or telemeter, may be considered broadly as any form of optical surveying instrument capable of measuring an angle. Its use depends upon the principles of trigonometry. The remote object whose distance is to be determined is considered as lying at one end of one side of unknown length of a triangle, one of the sides and two of the angles of which are known or readily measurable quantities. The range finder simply measures the accessible angles and from the data thus obtained the length of the side required, and therefore the location of the object, may be readily determined. Hence, an engineer's transit, a theodolite, a sextant, stadia telescope, or any form of angle measuring instrument known to surveyors, or even a photographic camera, may be used to determine range. The ordinary optical surveying and astronomical instruments, however, are ill adapted for range finding in time of war, for the reason that in battle information as to ranges is desired quickly and often. There is then no time to lay off carefully measured base lines, nor to solve triangles by calculation or reference to tables. Strictly considered, therefore, a range finder is an instrument devised with scales precalculated to read in terms of linear measure the distances corresponding to the changes in size of the angle or length of base line measured by the instrument, according to the principles upon which it may be constructed.

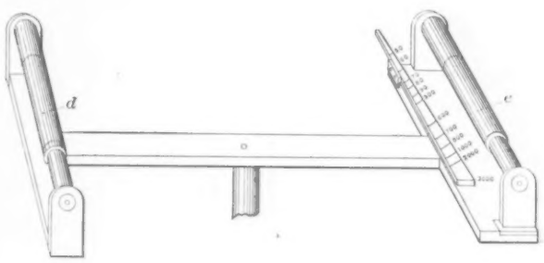


Fig. 2.—Base Line with Two Telescopes.

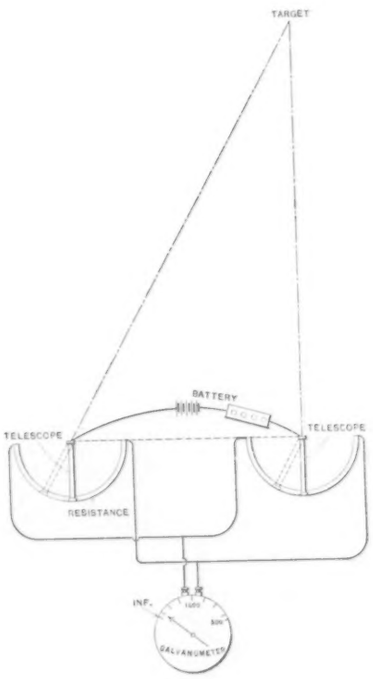


Fig. 3.—Fiske Range Finder.

Early Range Finders.

One of the earliest range finders consists of a telescope having a reticule or diaphragm in the focus plane of the object glass, on which is engraved a scale of distances based on the principle that an object of known hight projects an image on the diaphragm that diminishes in size as the distance of the object increases. Supposing the diaphragm to be graduated to determine the distance of a hostile army, the scale would be based upon the average hight of an infantry soldier or cavalryman, or Santiago. An instrument having on its diaphragm a scale based on the size of the offing angle is shown in Fig. 1. Several interchangeable diaphragms may be used graduated for use at the several different hights at which the observer may stand.

Another of the earlier forms of range finder, using two telescopes, one at each end of a carefully measured base line, is shown at Fig. 2. In using this instrument the frame is swung until the fixed telescope *d* is sighted upon the target. The pivoted telescope *c* is then moved until the target is visible through it also. The distance in yards may then be read from the wedge bar *c*, which is used to gauge the angle of the pivoted telescope and at the same time to furnish room for the marking of the graduations indicating considerable changes in position of the target for slight movements of the telescope. Although this instrument seems crude and inaccurate, yet some of the most precise and delicate of the range and position finders used in coast defenses are based upon the same or similar principles. One of these is the celebrated Fiske range finder, Fig. 3, which automatically indicates the distance on the principle that variations in electrical resistance caused by changes in position of the observing instruments may be made to indicate at a distant station corresponding angular changes to be read upon the scale in terms of distance and bearing.

So is the instrument of Rapieff, Fig. 4. In the Rapieff system the two telescopes are designed to be placed at a considerable distance apart, the greater the length of the base line, within certain limits, the greater the accuracy. A plane table having thereon a map of the harbor to be defended is provided with a pair of index arms pivoted at points upon the map accurately representing the positions of the telescopes. These pointers represent upon the map the optical axes of the observing telescopes and are connected with the latter by electrical transmitting apparatus, which synchronizes the movements of the pointers with those of the telescopes, whereby the location of the target is indicated graphically upon the map at the point of intersection of the index arms or pointers, when both telescopes are aimed upon the target. The positions of the batteries also being accurately marked upon the map, it becomes a simple matter for each battery commander to learn the bearing and distance of the target with respect to the location of his battery. This instrument may be taken as an example of the fortifications range and position finder employing a horizontal base line and two observers. The instruments should be well removed from the shock of the firing line and may be at any distance, provided the observers may command a view of the area to be defended.

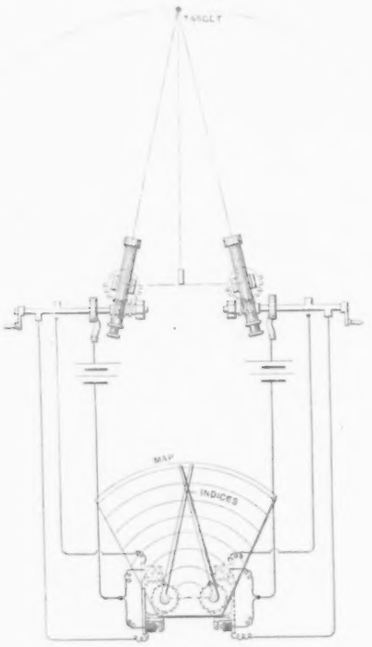


Fig. 4.—Rapieff Range Finder.

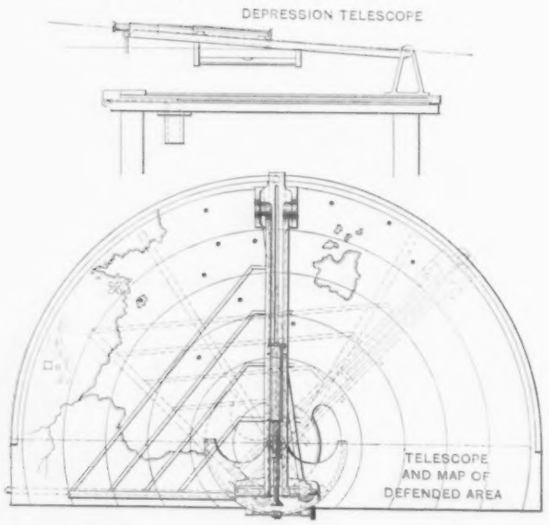


Fig. 5.—Depression Range Finder.

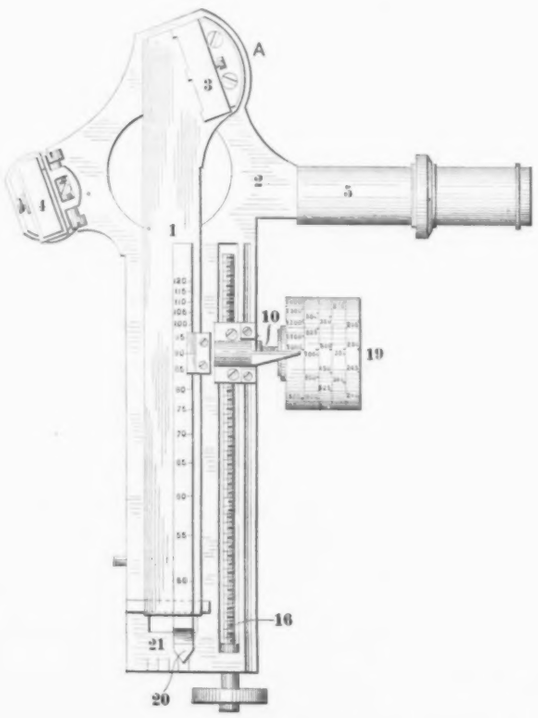


Fig. 6.—Fiske Sextant Range Finder.

RANGE FINDERS AND RANGE FINDING.

and by noting the size of the image on the diaphragm the distance becomes approximately known—approximately, because of the impossibility of knowing that the object observed is of the standard hight for which the scale was made, and the impracticability of measuring with accuracy such small angles. An instrument of this character may be employed with greater accuracy if the diaphragm be graduated to read distances from measurements of the "offing angle," the angle subtended by the distance from the water line of an enemy's ship to the horizon, because the angle then observed is much larger than when noting the hight of a soldier or ship's mast. It can be used, of course, only when an unobstructed view of the horizon is possible, and would, therefore, have been useless to the Americans at Cavite

The depression range finder locates the target in a manner similar to that just mentioned, and communicates information in a similar manner, Fig. 5. Only one observer is necessary, however, inasmuch as a vertical base line is taken represented by the hight of the instrument above the sea. Electrically or otherwise, imparted impulses may be used to transmit the movement of the telescope synchronously to an indicator operating over a map at the position of each battery commander, so that by keeping watch of the map the latter may always know the exact direction, range and location of the target. The hight of the observing telescope above the sea may conveniently be taken at from 50 feet upward. Of the depression type is the Lewis range finder, invented by Lieutenant Lewis, U. S. N., extensively used in the coast fortifications of the United States. Lieutenant

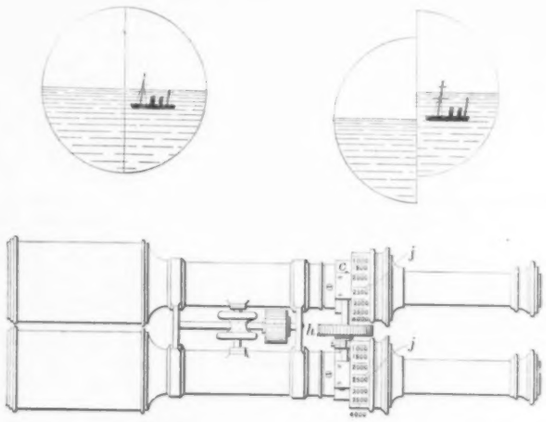


Fig. 7.—Nordenfeldt and Middleboe Range Finder.

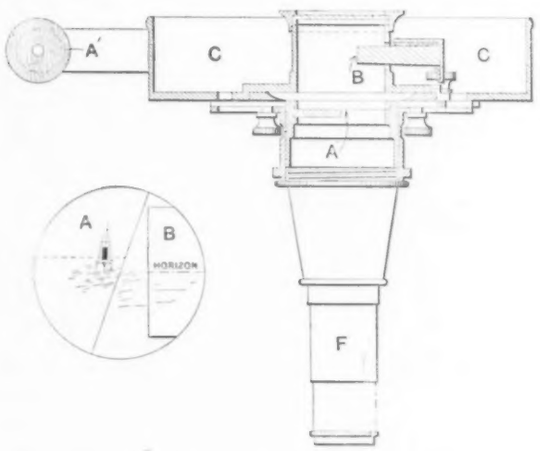


Fig. 8 —Bell Range Finder.

the actual aiming and firing being done from the position of observation. The patents of Lewis, Fiske and others disclose such apparatus.

The Crampton range finder, an English invention, is a most ingenious apparatus for coast defense. Its characteristics, generally speaking, are similar to those of the system of Lewis. In it are employed maps drawn to scale, on which is graphically indicated to the battery commander the position of the target. The indices are images of fine wires projected by a beam of light across the map, the intersection of the images designating the position of the target. The Crampton system contemplates the use of search lights by night, which may be used in connection with or as substitutes for the observing telescopes, and may likewise synchronously communicate their movements to the indices, whereby the focusing of the light upon the enemy's ship locates it upon the map of the battery commander.

The depression type of range finder lends itself well to submarine mine defense. The exact position of the mines are always known and marked on the map of the defended area, and it is obviously feasible to connect electrically the observing instrument with the mine, and to arrange contact points in the path of movement

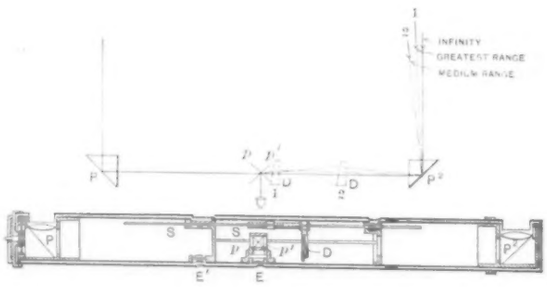


Fig. 9.—Barr and Stroud Range Finder.

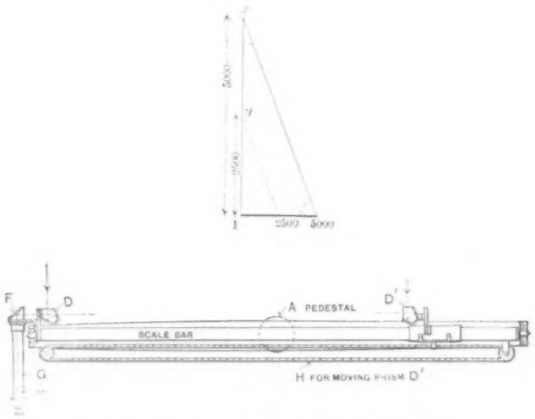


Fig. 10.—Searle and Saegmuller Range Finder.

RANGE FINDERS AND RANGE FINDING.

Fiske has adapted his system to be used with a depression instrument also.

It is not, of course, necessary that automatically operating indicating mechanism at the battery positions shall be connected with the distant observation instruments. The maps supplied to the battery commanders may be subdivided into properly designated subdivisions, representing areas of the harbor to be defended, and the observer being provided with means for informing himself on what area his instrument is directed when the target is in the line of sight, may telephone or signal by any prearranged code to the battery commander the designation of the area on which to lay his guns.

Capt. E. L. Zalinski once informed the writer that with an instrument of the depression type invented by him the average error of practice in experiments at Copenhagen was about 5 yards at a range of 5 miles.

Apparatus has been devised for use in connection with fortification range and position finders by means of which a gun may be automatically laid to place its projectile on a spot which the observer predicts the target will cross, and automatically fired at such a time that the projectile will reach the predicted spot at the same instant as the target. With such apparatus only men to load and clean the guns are needed at the gun position, of the telescope, so that when the line of sight following the movement of the target is directed at an area within the sphere of action of the mine the circuit will be closed and the mine exploded.

Range Finders on Board Ship.

War ships of the United States, as well as of other countries, have been fitted with range finders consisting of two telescopes, one at each end of the ship, and a galvanometer in circuit therewith, adapted to act as a range indicator. Under conditions of quiet these instruments are extremely accurate; but it has been found that the shock of naval warfare is such as to impair their accuracy. Then it is that recourse is had to the method of trial shots, or the older methods of trigonometrical range finding, such as measuring the angle subtended by a known dimension of the enemy, or that subtended by the offing beyond his water line. The sextant is always at hand on shipboard, and may be used for this purpose; but better still are the specially devised instruments from which distance may be read direct. One form of such an instrument has already been shown in Fig. 1.

In Fig. 6 is illustrated an instrument invented by Lieutenant Fiske for use in the contingency that the

electrical range finder is deranged by the concussions of a sea fight. It is constructed on the well-known principles of the sextant. In the figure, 2 is the frame of the instrument, 5 represents the telescope, 4 the fixed mirror lying in the line of sight of the telescope, one-half of which is silvered and the other half transparent, 3 a mirror fixed on the bar 1, which is pivoted at A. The bar 1 carries a scale representing hight in feet, and at its lower end a pointer for co-operating with the scale 21 upon the frame; 10 is a screw for moving the bar 1, and is carried in a bearing movable in guides along the frame 2, by means of the screw 16; 19 is the cylindrical head of the screw 10, graduated in yards in accordance with trigonometrical calculations, based upon the dimensions and mode of operation of the instrument. The mast head hights of all war ships are known and tabulated. When one of these is recognized as an enemy a mark on the sliding bearing of the screw 10 is placed opposite the numeral on the bar 1, representing her mast head hight. The cylinder 19 is then turned until the image of the mast head is brought into coincidence with the water line of the ship, as seen through the unsilvered portion of the mirror 4. The distance in yards may be read at the position of the pointer on the cylinder. The proper circle from which the reading is to be taken is indicated by the mark opposite the pointer 20.

The Fiske instrument is a good example of a type of portable range finder, adapted for instant use, based upon the double image reflecting principle of the sextant, the amount of movement necessary to bring the two images into coincidence serving to measure the observed angle subtended by the object of known dimension upon which the scale is calculated. Of this type there are many forms.

There are also many telemeters operating on the double image principle depending for their mode of operation upon the phenomenon of refraction.

Double Image Range Finder.

Fig. 7 represents the naval range finder of Nordenfeldt and Middleboe, of European invention. It is binocular, the telescopes being exactly similar. Its scale reads distance in yards and is calculated on measurements of the angle subtended by the distance from the water line of an enemy's ship to the horizon. One of the lenses in each telescope is divided vertically, one-half being mounted in a slide. When the two parts together form a single spherical lens only one image is presented to the observer's eye; but when the two parts are not concentric, one being raised higher than the other, two images are presented. By means of a milled head, *h*, the slide may be moved until the image of the horizon appears as a continuation of the water line of the observed ship. The number indicated upon the graduated ring *j*, which revolves as the lens moves, then represents the distance of the ship in yards.

Another and newer form of double image refracting telemeter for hand use is the invention of Commander Bell of the British Navy, a brother of Professor Bell, the inventor of the telephone (Fig. 8). The refracting element in this instrument is a prism of accurately determined angle of deviation which may be rotated, and by the amount of rotation necessary to bring one of two objects seen in the field of the instrument into coincidence with the other (such as the water line of a ship and the horizon), the distance may be indicated.

The double image hand instruments are very convenient for range finding, but as the base line on which their graduation is calculated is a dimension of the enemy or the angle of the offing, it is sometimes untrustworthy. The enemy may deceive the observer, as for example, by changing the hight of his mast; or the horizon may be interrupted by land so that the offing angle is unavailable. Obviously, therefore, it is preferable, if practicable, to take a base line at the observer's position, when identification of the ship and presence or absence of a view of the horizon are alike indifferent. As we have seen, this is entirely practicable on shore; with long base lines the range finders of coast fortifications attain an accuracy that renders the approach of a hostile ship within range of coast defenses extremely hazardous to the ship. Unfortunately, however, for reasons stated the system so successful on shore is untrustworthy on ship board under battle conditions. A two telescope instrument, such as might be evolved from the talemeter, shown in Fig. 2, is objectionable, because of the impossibility of recording accurately the minute variations in the size of the angle corresponding to considerable changes in the position of the target, when the base line is so short. Furthermore, two observers are necessary for convenient operation, and they must interfere with each other in using such an instrument.

Range finders for a single observer, with a base line a few feet in length, have been devised, however, giving an accuracy within 1 per cent. at a distance of ½ mile. Two of these may be briefly described, the first an English invention (Barr and Stroud), and the second an American invention (Searle and Saegmuller), both widely used on naval vessels. Each of these instruments is based on a similar principle and involves the science of optics as well as of trigonometry. A complete description of either of them would involve more space than can be here given to the entire subject; to set forth briefly the operation of each is all that can be attempted.

In Fig. 9 may be seen a horizontal section, illustrating the principles of the Barr and Stroud naval range finder. The interior of the tube A is supposed to be disclosed to an observer looking down from above. The tube is pivoted on a pedestal of convenient hight to sweep the horizon, and is also swung so that it may be rocked in altitude on a horizontal axis. P and P^2 are totally reflecting objective prisms (or mirrors), one at each end of the tube. *p p'* are two reflecting prisms (or mirrors), one occupying the upper and the other the lower half of the field of the eye piece E, one facing the prism P and the other the prism P^2. Thus if the instrument be so placed that gleams of light from an enemy's ship may strike each of the objective prisms they will be reflected to the small prisms in front of the eye pieces and thence to the eye, thus forming two images on the retina of the observer's eye placed at the eye piece. It is obvious that the two images might be brought into coincidence by rotating the prism P^2, as in the sextant; but the base of the triangle to be solved is only 5 or 6 feet long, and its apex from ½ to 5 miles away. The amount of movement, as where two telescopes are used with a like base, would be so infinitesimal that it would be impracticable to measure even considerable changes in distance with any degree of accuracy. Resort is therefore had to optical science. The rays from the distant ship incident on the prisms P and *p* always form a right angle when the instrument is sighted on the ship. While those incident on P^2 and *p'*, being from a finite distance, are always less than a right angle, the shorter the distance the less the angle. A refracting prism, D, of small angle is introduced between prisms *p'* and P^2, and so arranged that when close to prism *p'* the rays coming from P^2 and those coming from P will be coincident on the retina of the observer's eye, when the target is at the furthest distance at which the instrument is designed to be used—say the extreme range of the most powerful guns. Then it is obvious that by moving the prism D toward the reflecting prism P^2 the beam of light therefrom may be more and more displaced upon the retina, and it is also obvious that displacement of the beam from P^2 by reason of change of direction of the incident beam, due to change in position of the target, may be corrected by moving the prism D lengthwise of the axis of the tube, and that the amount of movement of the said prism may be utilized to indicate the distance of the target. The range of movement of the prism D being considerable, abundant space is provided for a legible and accurate scale. In this instrument the prism D is moved by a screw, and carries with it a scale bar, S, which slides in front of the left eye of the observer, placed at the eye piece E' adjacent to the eye piece E, so that he can follow the target and read the scale at the same time.

The naval range finder of Searle and Saegmuller is also based on the solution of right triangles, and is somewhat similar in principle to that just described. In this instrument the scale is calculated from a series of similar triangles, the triangle observed at each observation being right angled, as indicated in the diagram, Fig. 10. The instrument consists, briefly, of a bar several feet long, which represents the base of the triangle observed when the target is at the greatest distance at which the instrument is designed to be used. It is mounted on a pedestal to swing in azimuth, and to rock in altitude. At one end is a totally reflecting fixed prism, D, for receiving the rays that form, with the base, a right angle, and at the other end is mounted the prism D' to receive the oblique rays. The prism D' is movable lengthwise of the bar, and its lower surface is in the same plane as the upper surface of the prism D. A scale of distances is engraved on the bar over which the prism D' moves. The rays reflected from prism D are again reflected from a mirror or prism, F, and form an image in the lower portion of the field of a telescope, G, while those from the prism D' are similarly reflected and form an image in the upper half of the field, and are thus received on the retina of the observer's eye, forming there two images. These two images are brought into coincidence for an object at a distance equal to the limit of range of the instrument when the prism D' is at the end of the bar, by placing a refracting plate, *w*, in the path of the rays reflected from prism D'. Then when an object is viewed at the limit of distance, say 5000 yards, but one image is visible. Then if, with the prism D' still at the end of the bar, an object of unknown remoteness, but less than 5000 yards distant, be observed, two images will appear, out of coincidence, owing to the difference in direction of the incident rays; but by causing the movable prism to approach the refracting plate by moving it

along the bar the prism will finally reach a point at which the refracting plate will again bring the two images into coincidence. The reading of the scale at this point will indicate the distance of the object. It will be observed that in this instrument the incident reflecting prism is moved with respect to the refracting plate, while in the Barr and Stroud instrument the reverse is the case; but in each there is the same relative motion of the two, involving a similar principle, and in each a considerable linear extent is available for the scale; and that considerable changes in position of the target are represented by considerable changes in the position of the indicator upon the scale.

The Pennsylvania Malleable Company.

The Pennsylvania Malleable Company have been organized, at Pittsburgh, and have commenced the erection of a plant at McKee's Rocks, in that city, for the manufacture of malleable castings from the smallest size up to the very largest. Contracts have been placed for the building of the entire plant, and it is expected to be ready for operation not later than the first of the year. The Pittsburgh Bridge Company have been awarded the contract for the main building, which will be 640 x 220 feet in size, and will be entirely of steel. It is to be completed in about three months. The site for the plant contains 10 acres, and adjoins the large works of the Pressed Steel Car Company, at McKee's Rocks. In addition to the main building there is to be a brick building, 60 x 100 feet, to be used as a pattern and carpenter shop, and another building of the same size and design, to be used for the storage of patterns. There will also be an office building, 40 x 60 feet in size. The temporary offices of the Pennsylvania Malleable Company are in the Park Building, Pittsburgh.

To the Sandy Ridge Fire Brick Company has been given a contract for 500,000 fire brick, to be used in the building of the annealing ovens and cupolas. The Root's Company of Connorsville, Ind., have the contract for the blowers. The Auto-Gas Engine Company of Chicago have the contract for six gas engines of 65 horse-power each. The company are making a new departure in foundry practice in having all power generated by gas engines and electricity. The gas engines will operate the electrical generators to work the overhead cranes, the blowers, conveying machinery and other equipment. The plant will be thoroughly modern throughout, and will be splendidly equipped for the manufacture of malleable iron castings.

The capital stock of the concern is $600,000, and is said to have been very largely oversubscribed. The greater part of the output will be taken by the Pressed Steel Car Company, whose large new works are immediately adjacent. The officers of the Pennsylvania Malleable Company are as follows: S. White, president, and D. O. Holbrook, secretary and treasurer. Dr. R. G. G. Moldenke, for many years with the McConway-Torley Company of Pittsburgh, and one of the best known foundrymen in the country, will be general superintendent.

The Pittsburgh Stove & Range Company.

The Pittsburgh Stove & Range Company, recently organized at Pittsburgh, Pa., with a capital stock of $2,000,000—$1,000,000 preferred and $1,000,000 common, have elected officers, and expect to be in shape to transact business by October 5. It will be recalled that this concern were organized and took over the stove plants of De Haven & Co., Limited, the Anschutz-Bradberry Company, the Walters Stove Company, Crea, Graham & Co., Bissel & Co., A. Bradley & Co., Baldwin & Graham, F. L. Voegtley & Co. and the Graff Company, all operating stove foundries in Pittsburgh and Allegheny. Directors were elected some time ago, and on Friday, September 29, the directors organized by electing the following officers: Charles H. Bradley of A. Bradley & Co., president; Wm. T. Bradberry of the Anschutz-Bradberry Company, vice-president; John A. Roe of De Haven & Co., Limited, secretary, and James Graham of Baldwin & Graham, treasurer. The new officers have taken charge of the affairs of the Pittsburgh Stove & Range Company, who have been conducted for several weeks by an Executive Committee composed of C. H. Bradley, W. T. Bradberry and James Graham. The new company have rented three stories of the Horne Building, corner Wood street and Liberty avenue, Pittsburgh, where sample rooms and offices will be located. These sample rooms will contain samples of the goods manufactured by the different concerns. All the stores formerly operated by the concerns composing the Pittsburgh Stove & Range Company have been closed. These include the stores of A. Bradley & Co. and Baldwin & Co. on Wood street, Bissel & Co. and the Graff Company on Liberty avenue and De Haven & Co., Limited, on Penn avenue, all in Pittsburgh. No goods will hereafter be sold at retail. The stove plant formerly operated by F. L. Voegtley & Co. on River avenue, Allegheny; Crea, Graham & Co. on Rebecca street, Allegheny, and the Walters Stove Company in Sharpsburg, have been closed, and the stove foundry of Bissel & Co. on Robinson street, Allegheny, will be closed about January 1. The employees of these plants will probably nearly all be given employment in other foundries. It is the intention to operate four plants, all large and well equipped, these being the foundries of De Haven & Co., Limited, the Anschutz-Bradberry Company on Preble avenue, Allegheny; the plant of Baldwin & Graham, at New Castle, Pa., and the Graff Company, at Monongahela City, Pa. The output of these four plants will be very largely increased, and the Pittsburgh Stove & Range Company expect to market from 75,000 to 80,000 stoves and ranges annually. The present output is between 50,000 and 60,000. All the plants will be brought to a more economical working basis. This will be done at once, as the new concern are anxious to take advantage of the present business prosperity. An important departure by the new concern will be the manufacture of steel ranges and all kinds of gas stoves. Machinery for the manufacture of these goods will be placed in the plants as soon as possible. Steel ranges have never been made in Pittsburgh, but as all the material entering into this class of goods is made right in that city, the members of the Pittsburgh Stove & Range Company feel that these goods ought to be made in Pittsburgh to the best advantage, and will undertake their manufacture on a very large scale.

The Advance in Ship Values.

Manager A. B. Wolvin of the American Steamship Company, who are building four 500-foot steel ships for ore carrying, tells *The Iron Age* that though the ships were contracted in May under options and prices of the month before, they are being built at $125,000 each less than they could be to-day, and that he has received urgent offers for the sale of the ships to interests that are willing to pay $150,000 each more than they will cost. This is a difference of $600,000 for the four, and makes their present selling value not less than $500,000 each. The company have no intention of selling, as they have too much tonnage of their own to carry. This is a fair example of the rise in values of lake shipping property this summer, but it is not anything like the advance that would have been offered for such ships were they in readiness for service this fall. As high as $30,000, $40,000 and even $50,000 has been offered for the use of ships for the fall months, and single charters at early rates have been sold for $30,000 and better. The first of these four monsters of the American fleet will be launched in January, at Lorain.

There are now 12 heavy bulk freight ships under contract for delivery next spring for lake service, and more deals may soon be closed. Many more would be, despite the advance in ship plates, if the material could be gotten at all, for the advance in costs is not equal to that of earning capacity, and ships built at present prices can figure out a very satisfactory profit for the next year or two at least.

The next two steamers of the Bessemer fleet are to be named in honor of General O. M. Poe, under whose direction the great works at the entrance to Lake Superior were constructed, and for the great German chemist, Robert W. E. Bunsen. The fine steamer "Globe," which at the time of purchase *The Iron Age* stated would be renamed, has been called the "James B. Eads." It is interesting to note that this recognition by this company is the first that has been given General Poe, either by the Government or by the lake shipping interests, to whose fortunes he gave such an impetus. The happy idea of naming these ships for men prominent in engineering, mining and metallurgy was that of F. T. Gates, general manager of these Rockefeller interests. D. E. W.

The Virginia Coal, Iron & Coke Company have completed another large purchase of iron ore lands, including nearly 50,000 acres in Allegheny and Craig counties, Va. The company also have an option on 23,000 acres of mineral lands near the Tennessee line. The land will be opened by a branch railroad and the ores mined will be used in the company's furnaces in Tennessee and Virginia.

The first number of the *Export Implement Age* has just been issued in Philadelphia by the Nolan Publishing Company, its aim being to devote itself exclusively to the export trade in agricultural machinery and implements. It is published in four languages—English, Spanish, French and German.

The Iron Age.

New York, Thursday, October 5, 1899.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
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No Check to the Advance.

The sentiment is widespread among both producers and consumers that a moderate reaction in prices, if it could be accomplished, would be extremely desirable. Values have now reached such an altitude, as compared with those to which the trade had grown accustomed for several years, that the situation is viewed with considerable apprehension. Evidence to this effect is continually cropping out. On all sides one hears the question, How long is this state of affairs going to last? The upward movement has continued without a break ever since last autumn, and the probabilities point to still higher prices as strongly as at any time. But no reasonable being can expect such a movement to go on indefinitely. The culmination will be reached some time. But if it is to be reached at much higher figures than now prevail, the result will clearly be serious financial loss and possibly commercial disaster on a large scale. Business is adjusting itself as rapidly as possible to new conditions. Merchants and manufacturers have sold or worked up their low-priced stocks and inventories if taken now would show a sharp advance all along the line as compared with a year since. Much more of an advance would bring with it anxious days and perhaps sleepless nights for fear that a sudden drop should take place, catching high-priced stock on which a serious loss would have to be made in marketing it. Other considerations also have their effect on the trade, causing further advances to be deplored, but this is the most general.

It is easy to point out something wrong, but it is not always easy to suggest a remedy. Those who most heartily favor a reaction in prices are often part of the multitude who are co-operating in putting them higher. They continue to buy, and as long as the combined wants of buyers are equal to or in excess of the supply just so long will prices not only remain firm, but advance. The advance can only be checked by a general discontinuance of buying or by the concerted action of sellers. The former seems to be impracticable until all pressing wants are supplied, and the latter seems equally impracticable, because no seller can be expected to voluntarily present his customers with part of the proceeds of his own business. As the law of supply and demand operates remorselessly in reducing prices, notwithstanding combinations and agreements, so does it seem to operate equally beyond human control in the other direction. We will probably see the present boom run its natural course and end in a period of stagnation while values are being readjusted. But that period we firmly believe will be of short duration this time.

One phase of the situation in copper is giving thoughtful men in the industry considerable concern. For some time past there has been a difference which is close to one cent per pound between the prices of Lake and electrolytic brands. The fear is expressed—and there is some justification for it—that this difference in the price will induce an increasing number of consumers to experiment with electrolytic copper with the result that they will learn to handle it effectively. In other words, many of those whom conservatism has still kept firm in the ranks of consumers of Lake copper exclusively will waver in the faith, and that when the present pressure for supplies has passed the spread between Lake and electrolytic copper will be permanently carried down to a much lower figure than it has ever been.

The Fight in the Plumbing Supply Trade.

There is a sharp friction at the present time between the National Association of Master Plumbers and the manufacturers and dealers in plumbing supplies. The dispute arises over an attempt on the part of the Association to restrain the manufacturers and dealers from selling goods to master plumbers and others who are not members of the National Association. This demand is regarded by the plumbing supply men as unfair and arbitrary, and they are organizing to fight the matter all along the line. The trouble arose in 1884, when the National Association of Master Plumbers, at their annual convention in Baltimore, adopted a series of resolutions generally known as the "Baltimore resolutions," to the effect that the members of the association should confine the purchase of plumbing material to manufacturers and wholesale dealers who sell goods to master plumbers only. This step was taken for the purpose of trade protection in preventing the selling of plumbing goods by manufacturers to consumers, a grievance under which the plumbers had labored for many years. The manufacturers and dealers were subsequently called upon to subscribe to a declaration indorsing the Baltimore resolutions, and the matter formed a subject of controversy for several years. In the end the plumbers won the fight and practically all the supply men gave in their adherence to the rule. The resolutions were reaffirmed at subsequent conventions of the association, by both the National Association of Master Plumbers and the manufacturers.

At the plumbers' convention held last spring in New Orleans, La., a more radical step was taken, however, by the adoption of an amendment to the Baltimore resolutions, providing that the members of the association would, after September 1, 1899, purchase their supplies from those who sell only to members of the National Association of Master Plumbers, the term "master plumber" in the Baltimore resolutions being ruled to apply only to such plumbers as are affiliated with the association.

The wisdom of this piece of legislation was regarded as more than doubtful by the conservative members of the plumbing trade, and especially by those in the Eastern States. It was felt by many to be altogether too strong and to exceed the limits of a legitimate demand for trade protection, in view of the fact that fully one-third of the regularly licensed plumbers of the United States, not being members of the association, were under its terms to be practically boycotted by the supply manufacturers and dealers.

On the other hand it was urged that pressure of this kind was necessary in order to bring into the association those plumbers who were sharing in the benefits secured by the work of the association, but who refused to contribute toward its expenses or abide by its regulations.

The Eastern manufacturers and dealers who take a similar view of the matter, in anticipation of a call to subscribe to the New Orleans resolution, have recently organized under the title of the Manufacturers and Jobbers' Association of Plumbing Supplies, and passed a

resolution to the effect that the association, which includes some 90 leading concerns in the business, "will not become parties to a plan of trade oppression as required by the New Orleans resolution, and while they are willing to maintain the principles of the National Asociation of Master Plumbers, as outlined at the time of its organization, they recognize the right of every legitimate manufacturer and jobber of plumbing supplies, and every master plumber who has an established place of business and represents the industry of plumbing, and who has qualified under State or local enactments regulating plumbing and plumbers, where such exist; or where no license is required, an individual or firm with an established place of business, and representing the industry of plumbing, the usual trade exceptions holding as heretofore, to secure the material necessary to do business, and that the members of the Jobbers and Manufacturers' Association of Plumbing Supplies shall govern themselves accordingly."

Identical resolutions were at the same time adopted by the Central Supply Association, embracing the leading plumbing supply concerns west of the Alleghanies. Meanwhile the Executive Committee of the Master Plumbers' Association have sent out circulars calling upon the members to live up strictly to the terms of the New Orleans resolution, and reports of boycotting are current. The outcome of the fight will be watched with interest. The general impression is that the weight of reason lies with the manufacturers and dealers, who also possess to a large degree the sinews of war for a conflict of this kind, and who are determined to uphold their position. Moreover, there are many among the leading members of the Plumbers' Association who are out of sympathy with the demand of the association and who resisted its passage at New Orleans, but subsequently bowed to the will of the majority.

The Full Employment of Capital.

Financiers are laying much stress on the organization of industrial consolidations as one of the principal causes of the stringency in the money market. The dominant influence is of course the moving of the crops. But it is asserted that so much capital has been tied up in floating these great corporations that the withdrawal of such funds from active circulation would account for the unusually sharp demand for money, which is running in excess of average years. From our point of view a much more important influence than this seems to have escaped observation. We allude to the great advance in prices, wages, transportation and other elements entering into the cost of doing business. Much more capital is required by merchants and manufacturers in handling the same quantities of merchandise and materials than was the case even six months since, and a very great deal more than a year since. Conditions have altogether changed in the commercial world, and business is being conducted on a vastly different plane from that of depressed times, or when a low level of prices obtained. Not only have labor and materials advanced, but terms of payment have been shortened considerably, and the country is more nearly on a cash basis than for many years, if indeed it was ever so close before. And further, merchants and manufacturers are carrying larger stocks, doing business on a larger scale, pushed along by the impetus of prosperous times into a radically different position from that which they occupied when the demand was low and the outlook rather uncertain. The increased capital thus required must necessarily draw into use the surplus funds deposited in banks and other financial institutions and create an active demand for money even if no great temporary influence should make itself felt, such as the moving of the crops or the floating of an industrial corporation.

The advance in costs in the iron trade is so great that apprehension begins to be felt lest many hitherto sound concerns should find their capital inadequate to the demands of their business, and by borrowing too recklessly lay themselves open to serious trouble in the event of a reaction. The margin of profit must be very large, and customers must pay with clock-like punctuality to enable an establishment to run without embarrassment in these times on a business requiring as much or more materials than last year, with a capital only able to handle last year's business comfortably. A little slowness on the part of some customers would make itself felt quite disagreeably. The advance in interest rates, now becoming quite general through the country, is not merely a stock market episode, but is really a cautionary signal to the business world. Those who are spreading too much canvas should take in a reef or two for fear of squalls.

OBITUARY.

JACOB C. CRAMP.

Jacob C. Cramp, a son of William Cramp, the founder of the great Cramp Shipyards in Philadelphia, died on September 29, at Rosemont, Pa., from a stroke of apoplexy. Jacob, who was the fourth of the sons of William Cramp, was born August 8, 1835, in the old family residence in Philadelphia, close to the shipyard. Like all his brothers, he entered his father's business at an early age, as an apprentice, and learned every part of the shipbuilding industry. In 1862 he was taken into partnership, together with his four brothers, Charles H., William M., Samuel H. and Theodore Cramp. On the admission of the sons to the business, the firm became known as William Cramp & Sons, and each member of it performed some distinctive and important work in the business. Eight years ago, however, a syndicate of New York capitalists, headed by the Seligman Bros., bought a two-thirds interest in the property. A company was formed, the present William Cramp & Sons' Ship & Engine Building Company, and all the sons, except Charles H., retired. The elder Cramp died in 1879, leaving the property equally to the sons, and when they sold out a two-thirds share of each of their holdings was relinquished. The firm then were capitalized at $1,500,000, but since then have been raised in capitalization to $5,000,000, the brothers still holding stock in the company, but having no share in the management. At the close of the old copartnership, Charles H. Cramp was president; William, vice-president; Samuel, treasurer, and Theodore and Jacob, directors, the last named being a superintendent of construction. Jacob C. Cramp resided for the last ten years in Philadelphia, though after his retirement he spent much time in travel. He leaves a widow, one daughter and a son, Theodore, who was secretary of the company up to two years ago.

JOHN NATHAN BINNIX.

John Nathan Binnix, superintendent of the Central Iron & Steel Company, Harrisburg, Pa., died in that city on September 30, of enlargement of the liver. Mr. Binnix was born in Chester County, Pa., 65 years ago. In 1875 he went to Harrisburg to take up the superintendency of the Central Iron & Steel Company, having been employed in the iron manufacturing business at Nicetown, Pa., and Nashua, N. H., for many years prior to going to Harrisburg.

WILLIAM COOKE.

William Cooke, formerly president of the Passaic Rolling Mill Company of Paterson, N. J., died in that city, September 28, after a long illness, at the age of 69 years. He was born in Albany, N. Y., but removed in early youth to Paterson, where, in common with his three brothers, John, Watts and James, he learned the machinist's trade in the local locomotive shops. In 1857 William went to Scranton, Pa., and organized the firm of William Cooke & Co.; later the business was merged into the Dickson Mfg. Company, with which concern the deceased served as a director and superintendent of their locomotive department until 1868, when he returned to Paterson, and with his brothers organized the Passaic Rolling Mill Company. He was president of the latter concern until 1873, when he withdrew and formed a part-

nership with the late James Beggs, engaging in the machinery business in New York City. For the past 12 years Mr. Cooke had not been engaged actively in business.

The Alabama Consolidated Coal & Iron Company.

The Alabama Consolidated Coal & Iron Company have been organized under the laws of New Jersey, with a capital of $2,500,000 of 7 per cent. cumulative preferred stock and $2,500,000 of common stock, the officers being T. G. Bush of Anniston, Ala., president; J. E. Searles of New York, vice-president and treasurer, and F. M. Jackson of Birmingham, Ala., general manager, the general offices being at 27 William street, New York. The directors are: Abram S. Hewitt, New York; John E. Searles, New York; Samuel Thomas, New York; J. W. Middendorf, Baltimore, Md.; R. H. Edmonds, Baltimore, Md.; Joshua Levering, Baltimore, Md.; Jno. Skelton Williams, Richmond, Va.; T. G. Bush, Anniston, Ala.; F. M. Jackson, Birmingham, Ala.

The properties included in the consolidation are:

Clifton Iron Company, Ironaton.
Gadsden Furnace & Ore Mines, Gadsden.
Mary Pratt Furnace, Birmingham.
Gate City Ore Mines, Birmingham.
Standard Coal Company, Tuscaloosa County, Ala.

The Clifton property consists of two blast furnaces at Ironaton, Ala., one of which is now in operation. The other is to be remodeled or to be replaced with a larger stack. The mineral lands formerly owned by the Clifton Company comprise 2500 acres (estimated), of which between 400 and 500 acres are located at or near the furnaces. The ore is high grade brown hematite, low in phosphorus, and shows by analysis an average of 50 per cent. metallic iron. It is delivered directly from the washers to the stock house at an average cost of about 50 cents per ton. This is probably the most noted brown ore property in Alabama, and competent iron experts estimate a supply of ore on the land adjacent to the Clifton plant sufficient to supply half a dozen furnaces half a century. From this ore is produced the highest grade of iron made in Alabama. It is sought for special purposes and usually commands a premium over the average coke iron. In addition to the ore lands near the furnaces there are 28,965 acres of other lands, of which between 10,000 and 12,000 acres are well timbered with long leaf yellow pine. The Clifton holdings include timber grants of 1790 acres and their lands contain valuable deposits of lime rock.

The Gadsden Furnace is located at Gadsden, Ala., on the Coosa River, and is reached by the L. & N., the Southern and Alabama Great Southern railroads. The furnace site comprises about 30 acres of land within 1 mile of the town of Gadsden. The furnace has not been in operation for several years, but with the proper repairs (the cost of which has been estimated and provided for) it will have an output of not less than 1000 tons per week. All necessary additional engine and boiler power will be provided. The ore lands which are a part of this property consist of red hematite ore, a large part of which is located within 1 or 2 miles of the furnace, and can be delivered at a very low rate of freight. This ore property, in connection with 700 acres of other valuable red ore property which has been acquired, constitutes a lead of red ore 10 or 12 miles in length, estimated to contain between 5,000,000 and 6,000,000 tons of ore above water level. It is of excellent quality, and with small percentage of brown ore will make a very superior quality of iron. It is expected that with diligence the proposed repairs of this furnace can be completed within about four months.

The Mary Pratt Furnace property is located immediately adjoining the city limits of Birmingham and is reached by all railroads entering the city. It consists of 33 acres of valuable land and one furnace located thereon, together with tenement houses and other buildings. The furnace has been out of blast for several years, but with repairs (which are recommended by an expert and provided for) it will produce about 600 tons of pig iron per week. An abundant supply of ore and lime rock will be provided for this furnace from the Gate City property, hereinafter mentioned.

The Gate City lands comprise about 1800 acres, the nearest portion of which is located at Gate City, about 6 miles from Birmingham, and is traversed by four railroads—viz., Southern, Alabama Great Southern, Central of Georgia, Louisville & Nashville. They contain a large quantity of valuable red fossiliferous ore, estimated by Nicholas S. Hill, Jr., of Baltimore, Md., at about 17,000,000 tons. The ore analyzes from 39 to 42 per cent. metallic iron. The well-known Ida vein and Irondale vein are also on this property, in addition to what is known as the big middle vein, all of which contain workable ore.

The Standard Coal Company's property is situated in Tuscaloosa County, Ala., on the Alabama Mineral Division of the Louisville & Nashville Railroad. It comprises 32,211 acres of land, of which it has been estimated that from 18,000 to 24,000 acres contain workable seams of high grade coal for domestic, steam and for coking purposes, aggregating for the three upper workable seams from 150,000,000 to 200,000,000 tons. This is independent of the coal measures lying some 800 or more feet below. Fourteen thousand acres of land are covered by long leaf yellow pine timber, worth at least $5 an acre. The remainder of the land is also well timbered with fine hardwood, suitable for mining purposes. The property has been in active operation since 1889 and the mines now have an average output of 800 tons of coal daily. The Standard Company have paid dividends regularly since 1892. At the mines at Brookwood and Milldale there are 300 buildings, including officers' houses, store and tenement houses, as well as other buildings connected with the mines. There are 202 modern beehive coke ovens, from which there is being manufactured 200 tons of coke per day. The plant is well equipped with all modern appliances, including coal washer, hoisting engines and boilers, machine shops, blacksmith shops, &c.

It is proposed, in addition to the present workings, to open new mines on a seam of coal showing 77 inches of coal, which will bring the output of coal to more than 2000 tons daily. It is also proposed to build from 300 to 400 new coke ovens, new coal washers, and provide all appliances requisite for the enlarged plant and for the purpose of manufacturing coke sufficient to run the furnaces of the properties herein described.

The coal property has recently been carefully examined and reported on by Ricketts & Banks of New York, the furnace properties by J. P. Witherow of Pittsburgh and the Gate City property by Nicholas S. Hill, Jr.

All of the foregoing properties have been placed on a very low cash basis, and for their purchase, the required improvements and for working capital $2,500,000 each in preferred and common stock has been issued. The amount of cash working capital remaining in the treasury will be fully $250,000.

The prospectus makes the following statements: With only one of four furnaces in blast, and with the Standard Coal Company operating to only one-fourth of their immediate capacity, the properties are earning from $25,000 to $30,000 per month net profit, or more than enough to pay preferred interest on the entire capitalization. It is estimated that after the proposed improvements are made they will earn the first year $750,000. With the price of iron approximateing present prices the net earnings after the first year will approximate $1,000,000 per annum.

Summary.

The reports of experts show the Alabama Consolidated Coal & Iron Company's property to embrace 70,000 acres of land, of which more than 5000 acres contain iron ore. Workable seams of high grade coal underlie from 18,000 to 24,000 acres. Twenty-six thousand acres are well stocked with long leaf yellow pine. The experts estimate an amount of ore on the land adjacent to the Clifton plant sufficient to supply half a dozen furnaces for 50 years. On the Gadsden property there are between 5,000,000 and 6,000,000 tons of ore above water level, enough to run the Gadsden furnace 100 years.

Nicholas S. Hill, Jr., estimates the company's Gate City lands to contain 17,000,000 tons of iron ore that analyzes from 39 to 42 per cent. metallic iron.

Ricketts & Banks of New York, the mining engineers employed to examine the Standard Coal Company property, estimate the coal supply available in the three upper and double seams at 153,338,000 tons. Their very liberal allowance of 40 per cent. for pillars and loss leaves 92,332,800 tons of coal in these seams available for mining, sufficient to keep up an output of 600,000 tons a year for 150 years.

This more than conservative estimate does not include three lower seams known to exist, one of which is 12 feet thick. The coal in these seams underlying about 1000 acres immediately northwest of the line of outcrops can be mined without deep shafts. The engineers estimate the coal in two seams in this area at about 12,880,000 tons, or 7,728,000 after allowing for pillars and loss.

At the present time the entire product of the furnaces can readily be placed for the ensuing year at a profit of $7 per ton, at which price contracts can readily be made for future delivery, but in the estimate given herewith the earnings are figured on the basis of only $5 per ton.

While the four furnaces have an aggregate capacity of 180,000 tons a year, the estimate of actual outturn is put at only 150,000 tons, thus allowing a margin of safety of 30,000 tons, or nearly 20 per cent.

The output for the first four months will be the prod-

uct of the one furnace at Clifton already in operation, with a capacity of:

50,000 tons per annum, or 17,000 tons at $5 per ton	$85,000
For the remaining eight months with four furnaces in blast, at 150,000 tons per annum, equals:	
100,000 at $5 per ton	500,000
Profits on coal, not less than	140,000
Commissary and rents	25,000
Total	$750,000
For the second year at the same rate, the profits would be:	
150,000 tons of iron at $5 per ton	$750,000
Profits on coal and coke	150,000
Commissary and rent	30,000
Total	$930,000

A MINIMUM ESTIMATE.

Based on one-half the above profits on iron would give a profit on:	
150,000 tons of iron at $2.50	$375,000
Profits from commissary and rents	30,000
Profits from coal	150,000
Total	$555,000

or 15 per cent. on the common stock after paying the dividend on the preferred.

MANUFACTURING.

Iron and Steel.

The Carbon Steel Company of Pittsburgh have received a warrant from Harrisburg, Pa., ordering a survey of ground along the Allegheny River, Pittsburgh, from Thirty-second to Thirty-third streets, containing about 2½ acres and adjoining the present plant of that concern, the property being valued at about $130,000. This property has been created by filling in with slag, and after the survey has been completed and report sent to the Department of Internal Affairs at Harrisburg, the title to the property will be made out to the Carbon Steel Company. There may be a contest for these holdings between the applicants and the city of Pittsburgh. It is understood that the Pittsburgh Bridge Company are applicants for a similar tract, which contains about 3½ acres lying along the Allegheny River, adjoining the present works of that concern.

We have referred in previous issues to the Buffalo Charcoal Iron Company of Buffalo, N. Y., organized by Frank B. Baird and others, who built a charcoal iron blast furnace at Buffalo. It is proposed to remove the Orbiston Furnace from the Hocking Valley, Ohio, and re-erect it at Buffalo. The furnace is now only 50 feet high, but 10 feet will be added. The two Gordon stoves which were formerly at the Independence Furnace in West Virginia have been taken down and shipped. The equipment of the plant will then consist of three fire brick stoves 15 x 60, a blast furnace 12 x 60, a Weimer blowing engine now at Orbiston, after which a coking engine will be added. The associates of Mr. Baird and his brothers, C. R. Baird of Philadelphia and Samuel H. Baird of Buffalo, will be a number of parties interested in the American Charcoal Company, who obtain their charcoal from their own wood alcohol works in Buffalo.

The new owners of the Ohio Falls Iron Works, New Albany, Ind., are making important improvements in the plant, to increase its efficiency and convenience of operation. They expect to be turning out bar iron this week. George M. Clark, formerly of Mitchell, Tranter & Co., Covington, Ky., is prominent in the management.

The Virginia Iron, Coal & Coke Company, with general offices at Bristol, Va.-Tenn., will soon put in blast Bristol, Radford and Max Meadows furnaces. These furnaces have all been enlarged and improved, extra engines, boilers and stoves having been added and the cubical capacity of the furnaces increased. Arrangements are also being made to put Graham Furnace into blast.

Joseph Wharton is to build a new blast furnace at Port Oram, N. J. The two horizontal blowing engines have just been ordered from the Southwark Foundry & Machine Company of Philadelphia. A casting machine is to be adopted which is to serve both the present and the new furnace. The plant is under the management of Edward Kelly.

Pequest Furnace, at Buttsville, N. J., built by Joseph Wharton of Philadelphia, is expected to blow in during this month.

The Birdsboro Iron & Steel Company of Birdsboro, Pa., who are to acquire the E. & G. Brooke Iron Company, have set aside $1,150,000 as working capital and for the development and improvement of the plant. The plan is to arrange for converting the entire product of the blast furnaces into steel.

Nashua Iron & Steel Company, Nashua, N. H., manufacturers of steel and iron forgings, established in 1828, is now under new control. M. T. Denham, well known to the trade, is president of the company. They now have five forge hammers in operation ranging from 2000 to 20,000 pounds capacity, also two smaller hammers in blacksmith shop. Recently the furnaces have been rebuilt, the hammers brought up to modern standards, and a line of improved heavy machine tools have been added to the machine shop equipment. The business has so increased that the shop is now obliged to run night and day to fill orders. We are advised that this concern have at their works the only 10-ton steam hammer left in New England. This hammer is well adapted for turning out heavy marine engine work up to 36 inches diameter by a maximum of 40 feet in length and a total weight not exceeding 15 tons per forging.

The Knoxville Iron Company, Knoxville, Tenn., have recently bought the rolling mill at Harriman, which is now getting started double turn. The output of the new mill will be about 2000 to 2500 tons per month. The officers will be the same as are operating the Knoxville plant, which latter will be run night and day. These mills make bar iron, light T-rail and street railroad rail, and employ from 800 to 1000 hands.

The Sanderson Brothers Steel Company, Syracuse, N. Y., are putting up two additional 24-pot crucible melting furnaces with the necessary producers. It is expected that they will be running by the first of December. They have also put up a large wire drawing department for making fine wire for tool purposes, which has been in active operation for the last two months. A year ago a new sheet mill was put down.

The Salisbury Carbonate Iron Company, whose offices are in New York City, have blown in their Copake Iron Works after having made extensive repairs. This company now have orders on their books for their high grade carbonate iron running far into next year.

C. R. Baird & Co. of Philadelphia expect to blow in the Roanoke and Emporium furnaces toward the middle of the current month. The two Chickies stacks of this company are now being repaired, and as everything is ready for them in the way of stock it is expected they will be making iron toward the latter part of the month.

The Robesonia Furnace of the Robesonia Iron Company has been blown out.

The Schuylkill Iron & Steel Company have been incorporated in New Jersey for the manufacture of iron and steel, with a capital of $500,000. The incorporators are Henry Delaplaine, Merion, Pa.; James M. West, Jr., Germantown, Pa.; Wm. M. Fenniswood, Camden, N. J.

The Struthers Iron & Steel Company, Struthers, Ohio, manufacturers of sheet iron and sheet steel and galvanized sheets, rebuilt their sheet mill, recently destroyed by fire, and have put it in operation. Some improvements have been made and the mill has been rearranged for the economical handling of material.

The Empire Iron & Steel Company have acquired the Shenandoah Furnace property at Shenandoah, Va., which comprises 31,000 acres of ore land in Page and adjoining counties of Virginia, on the line of the Norfolk & Western Railroad, and the Gem Furnace of 35,000 tons annual capacity. Coke is obtained from the Pocahontas district. Repairs on the furnace are well under way and it is expected that it will be in blast by December 1. David W. Flickwir, former president of the Shenandoah Iron Company, will be superintendent in charge.

After a long idleness the small open hearth steel plant formerly operated by the Jennings Steel Company, on Preble avenue, Allegheny, Pa., is being repaired and will be put in operation as soon as possible. The plant contains one 10 gross ton acid open hearth furnace, three heating furnaces, one 8-ton hammer and two trains of rolls. A new concern have been organized to operate the plant known as the Orient Steel Company. They have taken out a charter under the laws of West Virginia with a subscribed capital of $10,000, for the purpose of manufacturing iron and steel and dealing in the same. The charter contains the privilege of allowing the capital to be increased to $150,000. Among those interested in the new Orient Steel Company are Grant McCargo, Henry G. Wasson, H. H. Patterson, L. D. Davis and James P. Brownlee.

The Paige Woven Wire Fence Company, who are erecting a new plant at Monessen, Pa., will add two open hearth furnaces to their equipment. The engineering work is being done by the Wellman-Seaver Engineering Company, Cleveland, Ohio.

The Chattanooga Furnace Company made their first run of the Chattanooga Furnace on September 17.

The Pioneer Furnace, at Gladstone, Mich., was blown out for repairs on October 2.

Machinery.

The drop forging plant of the Wilcox & Howe Company, Derby, Conn., which was to have been sold by the receiver, F. W. Benham, on September 28, did not find a purchaser on that day, and we are advised that the receiver will dispose of the remaining stock of goods and material as soon as possible at reduced figures. A large stock of carriage hardware and bicycle forgings is also to be sold.

Reed & Prince Mfg. Company, Worcester, Mass., have purchased the business, machinery and tools of the National Rivet Company of New Haven, Conn. The newly organized property is being moved to the plant in Worcester. With the machinery of the National Rivet Company added to the present plant, the output of the shop will be greatly increased.

The Witte Iron Works Company of Kansas City, manufacturers of gas and gasoline engines, report that notwithstanding the present high price of gasoline and distillate they are very busy on their regular stationary, portable and hoisting engines. In fact, their hoisting engine seems to be taking extraordinarily

well in the mining districts of the West. The Witte engine has both the tube and electric igniters.

The Michigan Malleable Iron Company of Detroit, Mich., have begun to operate their old plant at Eighteenth and One-Half and River streets in conjunction with its Delray plant. About 1400 men will be employed at the two plants, 300 of whom will be at the old plant, designated as plant No. 2.

Waltham Watch Tool Company, Springfield, Mass., advise us that they have increased the'r capital from $25,000 to $40,000 paid in, and will build a new factory near their present shop, which will increase their facilities to double their former capacity. They are running full time on Universal bench lathes and the Van Norman milling machine.

The Bullard Machine Tool Company of Bridgeport, Conn., have let the contract for a new blacksmith shop 40 feet wide and 60 feet long. The side walls are of brick and the roof trusses have a clear span and are made of steel. The Berlin Iron Bridge Company of East Berlin, Conn., have the contract for the entire building.

The Chambersburg Engineering Company, Chambersburg, Pa., report great activity in all branches of their business. They are at present extremely busy on ordered material, recently having received orders for two 48-inch gap riveters for the Pressed Steel Car Company at their Joliet shops; one 800-pound and one 1500-pound hammer for the same company at their McKee's Rocks shop; two 600-pound, two 1100-pound, one 800-pound, one 6000-pound double frame, one 3000-pound double frame and one 1600-pound special long stroke hammers for Manning, Maxwell & Moore of New York; one 3000-pound double frame hammer for the Pullman Palace Car Company; two 800-pound drop hammers, one 300-pound single frame hammer and one 1000-pound single frame hammer, for Hill, Clarke & Co.; one 1500-pound single frame hammer for the Pennsylvania Railroad shops at Pavonia, N. J.; one 4-ton double frame steam hammer for the Cumberland Steel & Tin Plate Company, Cumberland, Md.; one 126-inch gap hydraulic riveter with hydraulic crane and hoist, for the R. D. Cole Mfg. Company of Newton, Ga.; one 22 x 18, two 19 x 16, two 20 x 18, two 16 x 15 fan engines, for Wm. Clifford, for driving the Capel fan. They have also just completed a shipment of one 6-ton double frame hammer for the Duquesne Forge Company of Rankin, Pa., total weight of which is over 100,000 pounds. They also have a number of 600-pound and 800-pound hammers on stock.

The H. K. Porter Company of Pittsburgh, builders of light locomotives, are operating their shops to their full capacity, and have a great many orders on hand. Among the contracts now being turned out by this concern are four steel works locomotives for the Illinois Steel Company; four steel works engines for the Virginia Iron, Coal & Coke Company of Bristol, Va.; one 11 x 16 steel works engine for the Lukens Iron & Steel Company, Coatesville, Pa.; besides a large variety of miscellaneous engines for various other concerns, including a 36-inch gauge, 8 x 14 cylinder, back truck engine for the Ferrocarril de Oblatos of Mexico; a 7 x 12 inch cylinder, back truck design, 30-inch gauge engine, for Cuba; two 28-inch gauge compressed air motors for the Pennsylvania Coal Company, Dunmore, Pa.; a standard gauge air motor for G. B. Markle & Co., Jeddo, Pa. (being the fifth machine of this class furnished this concern); a little 20-inch gauge air motor for the Societe des Mines de Golden River of Damascus, Cal.; four steel works engines for the American Steel & Wire Company; one for the Phœnix Iron Company, Phœnixville, Pa.; one for the Latrobe Steel Company, Latrobe, Pa.; one for the Latrobe Steel & Coupler Company, Melrose Park, Chicago, &c.; one 30-inch gauge engine for the Raritan Copper Works, Perth Amboy, N. J., and one 30-inch gauge machine for the Ray Copper Mines of Riverside, Ariz.

Mackintosh, Hemphill & Co., founders and machinists, of Pittsburgh, Pa., have given their laborers a voluntary advance of 5 per cent. in wages.

The Weimer Machine Company, Lebanon, Pa., are working full time and some departments until 10 p.m. It is stated that this firm within the past year have refused $100,000 of work because it was impossible to fill orders.

The Union Iron Works of Spokane, Wash., have been incorporated with a capital of $100,000, by A. Corbin, Jr., E. J. Roberts, I. N. Peyton, H. E. McCamy, C. H. Prescott and J. M. Fitzpatrick, all of Spokane.

The Bakers' Machinery Company of Pittsburgh have been granted a charter of incorporation, and will build a plant in Pittsburgh for the manufacture of machinery used by baking houses and cracker factories, under patents owned by Clare G. Tucker, one of the incorporators. Those interested with Mr. Tucker are Chauncey Lobinger, R. D. Elwood, Jr., R. L. James and N. L. Holmes, a banker.

The Pittsburgh Valve & Machine Company, whose works are in Allegheny, Pa., have leased a site of ground in Lawrenceville, Pittsburgh, on which a new and larger works will be erected. The ground at present occupied by the concern in Allegheny has been sold to the Buffalo, Rochester & Pittsburgh Railway for a site for a new depot.

William Tod & Co., engineers, founders and machinists, Youngstown, Ohio, have received an order from the recently organized Sharon Steel Company, Sharon, Pa., for two large furnace blowing engines of the steeple type, and also one pair of blooming mill engines, with cylinders 46 x 60 inches, geared 5 to 7. This machinery is for the new open hearth steel plant and blast furnace which the Sharon Steel Company will erect at Sharon, and ground for which has already been broken.

Hardware.

The tinware factory of Stuber & Kuck, at Peoria, Ill., was burned on the 22d ult., the fire being caused by the explosion of an enameling oven. The loss is stated at $35,000, with insurance covering half that amount. Much manufactured stock was destroyed as well as considerable material.

Lewis D. Wynn, Sterling, Ill., manufacturer of Black Silk stove polish, states that the demand for his polish has more than doubled during the past year. Orders received cover the entire territory between Halifax and San Francisco.

The plant of Sheble & Klemm, manufacturers of farm and garden tools, Frankford, Philadelphia, Pa., was completely destroyed by fire on the night of the 27th ult., entailing a loss estimated at $100,000, mostly covered by insurance. Eighty men are thrown out of employment by the fire. The firm will rebuild as soon as possible.

Malleable Steel Range Mfg. Company, South Bend, Ind., who were established about nine months since, are making preparations to enlarge their plant, so as to be in position to meet the requirements of their increasing trade. About 40 men are at present employed, which number will be materially increased as soon as the additions contemplated are completed. The company manufacture 72 styles and sizes of family ranges and are intending soon to put a hotel range on the market. Irving A. Sibley, a well known hardware and stove merchant, of South Bend, is president of the company. The other officers are Henry Engman, Jr., who has had much experience in the manufacture of this line of goods, vice-president; W. L. Kizer, secretary, and Jacob Woolverton, treasurer, the two latter being members of the firm of Kizer & Woolverton, and Mr. Woolverton being president of the St. Joseph County Savings Bank. Lewis Matthews, formerly with the Majestic Mfg. Company, St. Louis, is superintendent.

Miscellaneous.

The Pittsburgh Brass Company of Pittsburgh have made application for a charter. The incorporators are Thomas Ward, Henry Shuman, Harry Ward, Joseph S. Brown and Dr. H. K. Beatty, all of Pittsburgh. The concern propose to build a small plant for the manufacture of large and small brass articles.

The Safety Car Coupler Mfg. Company, St. Paul, Minn., have been incorporated with a capital of $100,000 for the manufacture of car couplers. The incorporators are W. B. Lyon, G. Willius of St. Paul, and E. B. Schermerhorn of Galena, Kan.

It is probable the Continental Iron Company, operating plants at Wheatland, Pa., and Niles, Ohio, will build coke ovens, either at Wheatland or Niles.

It is stated that some Pittsburgh parties headed by A. Leo Weil have secured an option on the plant of the Sheldon Axle Works, at Wilkes-Barre, Pa., and will probably purchase it. The plant is running night and day and has very large orders for automobile axles.

The Pittsburgh Reducttion Company, Pittsburgh, Pa., manufacturers of pure aluminum, have recently made a large shipment to St. Petersburg, Russia. The Pittsburgh Meter Company of East Pittsburgh have also sent a large number of water meters to the Neptune Company, at the same place.

James H. Nutt, secretary of the Manufacturers' Association, at Youngstown, Ohio, has made the following statement in regard to the dissatisfaction existing among the puddlers, owing to their not having received an advance in wages: "It is my belief that the men responsible for the existing dissatisfaction are recent accessions to the association, who have been working outside it for several years for wages below the scale. Having been recently organized and affiliated with the association, however, they have adopted this doubtful method of manifesting their zeal and proving to the older members what good union men they are. In fact, they seem to think they cannot do enough to prove their loyalty to the association. There is no complaint here among our men, who have been organized for years and have maintained their organization through all manner of vicissitudes, and there is no ground for any. The action of the puddlers at Pittsburgh will in no way benefit the Amalgamated Association, but, on the contrary, will have a tendency to injure it."

Unconfirmed reports are to the effect that the American Steel & Wire Company have closed their option on the furnace and on property of Wetherbee, Sherman & Co., at Port Henry, N. Y., and that the same interest has purchased the furnaces and steel plant at Breaker Island of the Troy Steel Company.

Ninety per cent. of the zinc miners in the Joplin district stopped work on Monday in obedience to the order of the Missouri and Kansas Miners' Association.

The Iron and Metal Trades.

Interest continues to center in the Pig Iron market, in which there is accumulating evidence of the fact that the entire product up to the summer of 1900 will be urgently needed. The event of the week has been the purchase by the leading Chicago interest of about 100,000 tons of Bessemer Pig in the Valleys and elsewhere, for delivery during the first half of 1900. In addition to these sales a leading interest in Pittsburgh has taken 30,000 tons, delivery to begin at once, and a Valley plant has contracted for 20,000 tons for the first half. Altogether, at least 175,000 tons have been sold in the Central West during the past week.

In Foundry Irons the demand continues quite active, and while occasionally new Irons are seeking buyers for future delivery at some concession, the market is strong for the whole of the first six months of 1900. Producers are quite generally behind in deliveries, and the scarcity of spot Iron continues. It is hoped, however, that during the course of the winter the furnaces will be able to catch up. There is a report that some Southern Iron is being offered, to be returned from England.

It looks as though the reports of sales of English low phosphorus Pig had been exaggerated, so far as their magnitude is concerned. Well informed parties in the trade are unable to trace more than about 6000 tons. We note a sale of 5000 tons of Eastern low phosphorus Pig at $26.75, at furnace.

The Steel situation is a rather perplexing one. One very large consuming interest has been forced to lay idle a number of plants, and is reported to be drawing quite heavily on stocks of manufactured goods. This is reputed to be partly due to slow deliveries of Steel contracted for. It is the impression in the trade that large consuming interests have contracted for Billets for next year's delivery to an extent far greater than is generally supposed. Report has it that two recent contracts call for close to 200,000 tons. The price basis for a good deal of the Steel being contracted for next year is about $35.

This is in line with what is being done in Steel Rails. Last week the makers had a conference in this city, the result of which was that $33, East and West, is being named on orders for next year. It is estimated that the total tonnage already booked for next year is about 250,000 tons, about equally divided between Eastern and Western mills. This includes some recent Western orders, among which may be mentioned 50,000 tons for the Chicago, Burlington & Quincy and 25,000 tons for the St. Paul railroads. The great trunk lines east of Chicago have as yet placed no orders, nor have the majority of the railroads arranged for their requirements. Negotiations with the Pennsylvania and other large systems are now proceeding, however.

In other directions, too, the railroad demand continues to absorb large quantities of Bars and car material. The Illinois Steel Company deny that they have entered into a contract with the Pressed Steel Company for 400 tons of Plates per day.

While in large lines a fair part of the 1900 requirements are being placed, the reports come from the general and smaller trade that the present prices are causing some hesitation in buying for the future. It seems that many are beginning to feel that it is the best policy to await developments.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Oct. 4, 1899.	Sept. 27, 1899.	Sept. 6, 1899.	Oct. 5, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$22.75**	$22.50	$22.25	$10.75
Foundry Pig, No. 2, Southern, Cincinnati	**20.75**	20.25	19.25	9.75
Foundry Pig, No. 2, Local, Chicago	**23.00**	23.00	21.00	11.00
Bessemer Pig, Pittsburgh	**23.75**	23.50	23.25	10.40
Gray Forge, Pittsburgh	**21.00**	21.50	19.25	9.25
Lake Superior Charcoal, Chicago	**25.00**	25.00	23.50	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**38.50**	39.00	38.00	15.75
Steel Billets, Philadelphia	**40.50**	.....	40.00	17.75
Steel Billets, Chicago	.....	.....	38.00	17.00
Wire Rods, Pittsburgh	**46.00**	45.00	45.00	22.00
Steel Rails, Heavy, Eastern Mill	**33.00**	33.00	32.00	18.00
Spikes, Tidewater	**2.60**	2.60	2.40	1.40
Splice Bars, Tidewater	**2.25**	2.15	2.10	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago	**19.00**	19.00	17.00	7.75
O. Steel Rails, Philadelphia	**21.50**	21.50	18.50	10.50
O. Iron Rails, Chicago	**30.00**	28.00	23.00	12.50
O. Iron Rails, Philadelphia	**25.00**	25.00	21.50	12.50
O. Car Wheels, Chicago	**20.00**	19.00	16.50	11.00
O. Car Wheels, Philadelphia	**20.50**	20.00	18.00	10.25
Heavy Steel Scrap, Chicago	**18.00**	18.00	15.50	7.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**2.10**	2.10	2.00	1.15
Common Iron Bars, Youngstown	**2.25**	2.25	1.95	1.00
Steel Bars, Tidewater	**2.40**	2.40	2.30	1.15
Steel Bars, Pittsburgh	**2.50**	2.50	2.35	1.00
Tank Plates, Tidewater	**3.00**	3.00	2.75	1.30
Tank Plates, Pittsburgh	**2.90**	2.90	2.75	1.15
Beams, Tidewater	2.40	2.40	2.40	1.40
Beams, Pittsburgh	2.25	2.25	2.25	1.20
Angles, Tidewater	2.40	2.40	2.40	1.20
Angles, Pittsburgh	2.25	2.25	2.25	1.10
Skelp, Grooved Iron, Pittsburgh	2.25	2.25	2.25	1.10
Skelp, Sheared Iron, Pittsburgh	*2.50*	2.50	2.60	1.20
Sheets, No. 27, Chicago	*3.15*	3.20	3.40	2.00
Sheets, No. 27, Pittsburgh	**3.15**	3.15	3.10	1.87½
Barb Wire, f. o. b. Pittsburgh	**3.40**	3.40	3.25	1.70
Wire Nails, f. o. b. Pittsburgh	**2.80**	2.80	2.65	1.35
Cut Nails, Mill	**2.50**	2.50	2.40	1.10
METALS:				
Copper, New York	*18.37½*	18.37½	18.50	12.25
Spelter, St. Louis	5.35	5.35	5.35	4.65
Lead, New York	4.60	4.60	4.60	3.90
Lead, St. Louis	4.50	4.50	4.50	3.77½
Tin, New York	**32.25**	32.85	32.00	16.35
Antimony, Hallett, New York	9.75	9.75	9.75	9.00
Nickel, New York	36.00	36.00	36.00	35.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	4.82½	4.82½	4.82½	2.85

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, October 4, 1899.

Foundrymen in this vicinity are finding much trouble in getting a supply of Coke, The regular price of Foundry Coke is now $5.25, Chicago, but it is so scarce that sales have been made the past week at $5.50 per net ton. In some cases it has been necessary to use Anthracite in cupolas on account of the inability to secure any Coke whatever. The scarcity is attributed mainly to the shortage of cars, which is felt in other directions. Railroad companies themselves have not been able to furnish cars for transportation of Iron and Steel under contract to themselves. The traffic now being carried over Western railroads is of extraordinary magnitude, and is causing all sorts of trouble on account of lack of rolling stock. Locomotives awaiting repairs are in some cases indefinitely laid off, merely because Spring Steel cannot be secured of the size required.

Pig Iron. — Transactions still continue on a large scale. Some houses report a lighter demand for future delivery, as compared with recent weeks, but the business they are securing would ordinarily be considered heavy. The large consuming interests having headquarters here are continuously buying. A sharp demand is still felt for spot Iron, but the supply is extremely limited. The demand for Open Hearth Basic Iron is greater than can be supplied. Plenty of business is still in sight, and consuming interests have by no means covered all their requirements for the first half of next year. Furnace companies are far behind on deliveries. Some dealers state that their customers are hardly getting over one-third of the Iron for which they had contracted. It is known that some of the furnace companies already oversold are still taking orders, and it is a conundrum as to how they would be able to fill them. If this practice is continued it will naturally result in much trouble in the future, and the demand for Iron from consumers who thought themselves supplied may lead to still higher prices. The rates prevailing in this market have not been changed, but sales are reported to have been made at Milwaukee on basis of $26 for No. 1 local Foundry. We quote for cash as follows:

Lake Superior Charcoal	$25.00 to $26.00
Local Coke Foundry, No. 1	23.50 to 25.00

Local Coke Foundry, No. 2	23.00 to	23.50
Local Coke Foundry, No. 3	22.50 to	23.00
Local Scotch, No. 1	23.50 to	25.00
Ohio Strong Softeners, No. 1	24.50 to	25.00
Southern Silvery, according to Silicon	.... to	26 00
Southern Coke, No. 1	23.65 to	24.00
Southern Coke, No 2	22.65 to	23.00
Southern Coke, No. 3	21.65 to	22.00
Southern Coke, No. 1 Soft	23.65 to	24.00
Southern Coke, No. 2 Soft	22.65 to	23.00
Foundry Forge	.... to	21.15
Gray Forge and Mottled	.... to	21.15
Southern Charcoal Softeners, according to Silicon	21.65 to	25.65
Alabama and Georgia Car Wheel	24.65 to	25.65
Malleable Bessemer	.... to	25.00
Standard Bessemer	.... to	25.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon	31.00 to	31.50

Bars.— Considerable business in Bar Iron is still being placed for delivery next year. It is surprising how well the demand keeps up for deliveries so far in future. Buyers are pressing for early delivery also, but the mills are so well sold up that it is difficult to find any able to meet such requirements. Mill shipments of Common Iron for future delivery are still quoted at 2.30c. to 2.40c., Chicago, but some sales have been made for this year's delivery as high as 2.60c. Soft Steel Bars are in good demand, but in somewhat better supply than Bar Iron and earlier delivery will be made. Mill shipments are quoted at 2.30c. to 2.65c., according to the location of the mill, the nearby mills making lower prices than Pittsburgh and Valley mills. Hoops are continued at 2.65c., base, Chicago, for Bands, but an early advance is expected. Manufacturers have advanced the prices of Cold Rolled Shafting to 15 per cent. off on large lots, and 20 per cent. off on carloads. Jobbers report the demand from their stocks as heavy as before, with mills far back on deliveries. Shipments in some cases are just being received on contracts placed six months since. Small lots from stock are quoted at 2.90c., minimum, for Bar Iron; 2.65c to 3c. for Soft Steel Bars, and 3.65c. for Norway and Swedish Iron.

Car Material.— Railroad companies need many more cars, and it is asserted that large orders would be forthcoming if the car works were not so full of work as to be unable to make reasonably early deliveries. The demand for Steel Cars is increasing, and it is stated that orders are about to be placed for 3000 with new works, which are preparing to manufacture Steel Cars.

Structural Material.— City business is still of small proportions, but a fair run of orders is being received by manufacturers for small lots from outside points. A large depot at Rock Island is to be let this week. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 3.15c. Store prices are now showing a somewhat greater variation from mill prices on account of shortage of stock.

Plates.— The Illinois Steel Company deny the truth of report that they have contracted to deliver 400 tons daily, to be used in the manufacture of Steel Cars. They expect to continue to supply their regular trade, and will not sell their entire output to one interest. The inquiry for Plates is very good, but probably is not so heavy as recent weeks. It is possible to get a limited range of sizes on Steel Tank from some mills at 3c., Chicago, but for the full range our quotations represent the market. Mill shipments are now quoted as follows, Chicago, for reasonable deliveries. Tank, 3.15c. to 3.25c.; Flange, 3.50c. to 3.60c.; Marine, 3.60c. to 3.75c.; Fire Box, 4c to 5½c. Jobbers quote Tank in small lots at 3.40c., and Flange, 3.65c.

Merchant Pipe.— The demand is excellent. Plenty of orders are steadily being sent in to the mills. Quotations are continued at 50 and two 10's for mill shipment. Manufacturers have advanced Merchant Steel Boiler Tubes, and quote them at 40 per cent. off for 1¼ to 1¾ inches, 50 per cent. off for 2 to 2¾ inches, 55 per cent. off for 3 inches and larger. Merchants have not yet advanced their prices to correspond, but will probably do so during the coming week.

Sheets.— Good inquiries are being received for both Black and Galvanized Sheets, on which deliveries in some cases extend into next year. Prices on Black Sheets show considerable variation, mill shipments being quoted from 3.15c. to 3.40c., Chicago, for No. 27 Black. Galvanized Sheets are selling at 70 and 5 to 70 and 10 per cent. off, with 15c. freight allowance. Jobbers quote small lots from stock at 3.40c. to 3.50c. for Black, and 70 per cent. off for aGlvanized.

Merchant Steel.— Several large contracts have been placed by implement manufacturers during the past week for shipment to July 1. This shows that the high prices now quoted have not checked business. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.70c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Steel, 3½c.; Toe Calk Steel, 4c.

Billets and Rods.— The Billet market is quiet, with no quotations being made by local mills. Some inquiry is noted for Rods for December delivery, on which $50 is quoted.

Rails and Track Supplies.— Considerable tonnage is being placed for Steel Rails for next year's delivery, on which mills continue to quote $33 for large lots of Standard Sections, and up to $35.50 for small lots. Sales of Light Rails are steadily being made at $33 to $40 for large lots, according to section. A good demand is also noted for Track Fastenings. Track Supplies are quoted as follows: Steel Fish Plates, 2.05c. to 2.15c.; Iron Fish Plates, 2.50c. to 3c.; Spikes, 2.75c. to 2.80c.; Track Bolts, with Hexagon Nuts, 3.80c. to 3.85c.; Square Nuts, 3.65c. to 3.70c.; Steel Links and Pins, 3c.; Iron Links and Pins, 2.95c.

Old Material.— Old Material of all kinds is so scarce that some dealers say a price can hardly be named which is not accepted. Consumers and dealers are competing with one another to secure the limited supply now available. Dealers' selling quotations are as follows, per gross ton: Old Iron Rails, $30; Old Steel Rails, mixed lengths, $19 to $20; Old Steel Rails, long lengths, $24.50 to $25; Relaying Rails, $25 to $27.50; Old Car Wheels, $20 to $21; Heavy Melting Steel Scrap, $18 to $18.50; Mixed Steel, $14 to $15. The following selling prices are per net ton: No. 1 Railroad Wrought, $23.50 to $24; Dealers' Forge, $17 to $18; Fish Plates, $26.50 to $27; No. 1 Mill, $15 to $16; Heavy Cast, $16 to $16.50; Stove Plate, $11 to $11.50; Railroad Malleable Cast, $16.50 to $17; Agricultural Malleable Cast, $14 to $15; Iron Car Axles, $30 to $32; Horseshoes, $17 to $18; Cast Borings, $10.50 to $11; Steel Axle Turnings, $13 to $14; Iron Axle Turnings, $14 to $14.50; Machine Shop Turnings, $12 to $12.50.

Metals.— Practically no change has occurred in Metals. Carload lots of Lake Superior Coper are quoted at 18⅞c., and Western at 17⅞c. Pig Lead is held firmly at 4.60c.

Tin Plate.— The volume of business continues heavy, but deliveries are now being made a little more freely by the mills. Jobbers are still having a heavier demand for Roofing Plates than they are able to supply promptly, while business continues very good in Coke and Bright Plates.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., October 3, 1899.

The third quarter of the year opens on a steady and firm market, considering the extraordinary advances which have been made, without even the first sign of a reaction. Prices are at the highest point yet reached and look as though they might go a little higher temporarily, but there is a general feeling that they are high enough. A large output is required to meet the demand, but as nearly everything that can be utilized is already in operation, it is not good policy to crowd prices too high, especially as the time is approaching when a good deal of work may be retarded by bad weather and other influences incidental to the season. There is no reason, neither is there any immediate prospect, of prices being lower, or of work being less abundant, but there is an evident feeling of conservatism, which is shared alike by both buyers and sellers. There is so much work on hand, and so much in prospect, that sellers would not be uneasy even if the demand did fall off for a while, and, besides, it is eminently desirable to find as near as possible some solid basis for prices for next year's business. Until this year the dominant idea was to get prices up somehow; things could hardly be worse, so that any change would be for the better. Now, however, there is not only a willingness, but a strong disposition to consider the situation on its merits. If prices now ruling are likely to be too high for the coming year, sellers want to know it and to adjust themselves acordingly— nobody would grumble at a decline if a decline was seen to be necessary to secure a permanently steady market. This is the uppermost thought at the present time, although, so far as any one can see, prices are likely enough to be higher before they are lower, and that even during 1900 there is no very distinct indication of anything below to-day's prices. This matter is of such para-

mount importance that it has led to a temporary hesitancy in regard to operations for next year's deliveries. Producers have a considerable amount of orders on their books, with deliveries extending to the middle of next year (some beyond that), and they are not averse to a breathing spell before increasing their lines. Buyers are disposed to place orders providing they are encouraged to do so, but nobody seems to want business unless at full prices, and if crowded they might quote still higher figures. They are rather inclined to a waiting policy, however, until they can see further ahead, particularly as they have all the business they can handle for a good many weeks to come.

Pig Iron.—The market has not been very active during the past week, but prices have been strong and have averaged a little higher than during the week previous, and probably higher than at any time during the entire year. This is not because of any urgent local demand, but rather as an adjustment with prices at other points. No. 2 X Foundry can be placed at prices equivalent to $23 to $23.50 by shipping to New England or the Northwest, consequently there is no use feeding it out at less money to consumers in this vicinity, unless there is a very small freight between producer and consumer. Some Iron can still be had at $22.50, however, but $22.75 to $23 and upward is usually quoted, and for established brands there is no pressure even at the full quotations. New Irons have been offered at extremely low figures, in some cases $1 to $2 below the usual rates, but they make no impression on the general market, which is so bare of good stock that buyers are glad to get what they want without dickering much about prices. Taking everything into account, the Pig Iron situation seems to be as strong as at any time during the entire year. Nearly the entire output for the current year has been placed, and from one-half to two-thirds for the first half of next year, so that with stocks practically exhausted sellers can make almost any prices they please. There is no disposition to crowd matters, however, and if buyers are not too impatient prices will not go much beyond those ruling to-day, which for city or nearby deliveries are as follows: No. 1 X Foundry, $23.50 to $24; No. 2 X Foundry, $22.50 to $23; No. 2 Plain, $21 to $21.50; Standard Mill Iron, $19.50 to $20; Basic, $23 to $23.25; Bessemer, $25 to $26; Low Phosphorus, $27.50 to $28.

Muck Bars—Prices are easier and demand only moderate. Sellers ask $32.50 to $33.25, at mill.

Billets.—Prices are purely nominal at $40.50 to $42 for October and November shipments, and $39 to $40 for the first quarter of 1900.

Plates.—Demand as brisk as ever and prices a shade dearer. It is difficult to place orders for deliveries before the middle of next month, and even then only small lots can be taken, as a great deal of the capacity is under contract well into next year, so that orders for large lots are not easily placed. Sales are mostly at 3c. to 3.05c., at mill, for Ordinary Plates, nominal quotations being as follows, with more or less of a premium for quick deliveries: Steel Plates, ¼-inch and thicker, 3c. to 3.1c.; Shell, 3.2c. to 3.3c.; Flange, 3.40c.; Fire Box, 3.50c.; Charcoal Iron Plates, C. H. No. 1, 3.10c.; Best Flange, 3.60c.; Fire Box, 4.10c.

Structural Material.—There is no change in this department, the demand being equal to the fullest capacity, which is already very much oversold. There is some talk of an official advance, but whatever that may be it is already fully discounted, as there is very little new business done, unless at 10c. to 20c. above the official rates, which are as follows for Philadelphia or nearby deliveries: Beams and Channels, 15 inches and under, Angles not over 6 inches on either leg, Zee Bars, all 2.38c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.43c.

Bars.—There is a good demand for everything that can be made available during the next 60 to 90 days, and in some cases buyers are bidding for large lots to be delivered during the first half of the coming year. Prices are easily maintained at full quoted rates, which are as follows for city or nearby deliveries: Ordinary Bars, 2c.; Refined Bars, 2.10c. to 2.20c.; Test Bars, 2.20c. to 2.25c.; Steel Bars, 2.40c. to 2.60c.

Sheets.—There is no change to note in this department, orders being very plentiful and prices as follows (Common Sheets two-tenths less): No. 10, 3.15c. to 3.20c.; No. 14, 3.30c.; No. 16, 3.40c.; Nos. 18-20, 3.50c.; Nos. 21-24, 3.60c.; Nos. 26, 27, 3.70c.; No. 28, 3.75c. to 3.85c.

Old Material. There is no definite change from last week's prices The demand is good and, although the supply is large, buyers are not hard to find, particularly for Steel materials. Bids and offers are about as follows for deliveries in buyers' yards: Cast Borings, $11.50 to $12; Wrought Turnings, $12.75 to $13; Machinery Cast, $16 to $17.50; Old Car Wheels, $20.50 to $21; Heavy Steel Scrap, $19 to $19.50; Steel Rails, $21.50 to $22; Iron Rails, $25 to $26; No 1 Railway Scrap, $22.50 to $24; Iron Axles, $27 to $28; Steel Axles, $26 to $28.

(By Telegraph.)

A large block of Low Phosphorus Pig Iron has just been sold for next year's delivery at quoted rates.

Other grades are being taken more freely at full prices.

A copartnership in the firm name of Dutilh-Smith, McMillan & Co. has been formed, with general offices in Philadelphia and London. The business of the firm will be that of general export, attention being given especially to steam railroads and their equipment. Under a long term contract the firm will exclusively handle the export trade of the American Car & Foundry Company, and their offices in Philadelphia and London will be their direct branches. This company are the consolidation of the principal car (wagon) builders in America, some 15 in all, with an annual capacity of about 100,000 30-ton cars (wagons) and with a capital of $60,000,000. Dutilh-Smith, McMillan & Co. invite inquiries for every description of rolling stock, freight, refrigerator, passenger and tram cars, as well as for locomotives, rails, bridge and structural material. An important department of the firm will be the duplication of manufacturing plants according to the most advanced American practice, for which they have the best connections and facilities, and will be pleased to submit propositions. Mr. Smith has had a large experience in this line, having been one of the leaders in building up trade between Russia and the United States. Some years ago he was head of the well-known firm of E. D. Smith & Co. of Philadelphia, and afterward spent several years in Russia, to which country he sent immense quantities of machinery and other manufactures required for the establishment of new industries in that country.

Birmingham.

BIRMINGHAM, ALA., October 2, 1899.

The report heralded by the daily press last week of an advance of $1 per ton in Iron at this point had no foundation in fact. Neither was there a heavy trade as reported. The market was about as reported the previous week, and was quiet and firm at unchanged prices. There was a fine run of small and medium sized orders from regular customers of the various interests, which were cared for without attendant excitement. And this was about the business of the week. There was variation in prices, depending upon the credit of customers, delivery, &c. One interest declared it had no longer a regular schedule of prices, was not courting general business, but such as came to it was disposed of each case on its merits. Each seller in such cases is the sole arbiter as to these merits, and it reminds one of guerilla warfare, where nothing else is thought of but the temporary advantages of the moment. It is probable that $18.50 was paid for some No. 2 Foundry, the buyer being in a hole, and it requiring that price lever to get him out. But that was not the general price. It is a very difficult matter to obtain details as to prices, which shows the great irregularity that pervades them. But nothing reliable can be ascertained that would justify any changes in last week's quotations. There has been an increased drain on the warrant yards, but the amount in stock there is so small that it creates no comment now. If anything, the yards are so bare of stock that a good sized order for mixed grades would be difficult to fill. There is an increasing complaint as to shortage of cars, both at the Ore and Coal mines, as well as at the shipping yards, which has interfered with and retarded shipments, and, at some points, decreased the output, which is regulated by the cars furnished. If at the beginning of the busy season these complaints are so serious they will only be greater as it advances, and consumers may as well now make up their minds to wrestle with delayed shipments the coming winter.

Activity in the mining localities was never so great as now, and improvements have been added, modern appliances adopted, and all the facilities that circumstances justified have been installed. So great, though, is the demand for Ore that several hundred tons have been contracted for daily delivery from comparatively newly developed fields. New machinery has been purchased and installed in these fields to increase output, and they appear now as though they will become an important source of supply for this locality.

There is still some dickering going on for furnace property and Ore and Coal lands, but there is nothing in them so far but the option. Some important Coal properties have every indication that precedes a change in ownership, but there is nothing so uncertain as these deals.

Cleveland.

CLEVELAND, October 3, 1899.

Iron Ore.— For the student of the situation with reference to future possibilities the past week has been fraught with many indications of the trend of events. Perhaps the most important of these is found in the commencement by agents of the Carnegie Steel Company of the inspection, with a view to their purchase, of a number of Steel freight vessels owned by parties not connected with Ore firms. The deal for the steamer "W. R. Linn" and the schooner "Carrington," both carriers of very respectable size, is understood to have practically gone through. It is also certain that the Carnegie agents have inspected a large number of vessels, and, basing their opinion upon a belief that if the Carnegie interest goes into the vessel business at all it will go on a large scale, many well informed men are making predictions that many boats will change hands before the close of navigation. Another Ore shipping firm has been figuring on the purchase of vessels, and went so far a few days ago as to secure options on several Steel craft. The sales of Ore during the week have been no heavier than in its predecessors. "Odd lots," small in quantity, are not the most desirable offerings. The market is if anything somewhat stronger; the prices remain practically as last quoted.

As for the transportation end of the situation, a period of bad weather and low water enabled the market to close the week in a decidedly better condition than it was at the time of the last report. The Ore shippers assert most positively that they will make no bids for tonnage in excess of the equivalent of the grain rate from the head of the lakes, which has been stationary for some days at $1.67. However, so far as can be learned, no charters have as yet been made for carrying Ore at less than $1.85, the figure to which the rate broke from $2 more than a week ago. There is, however, very little "wild" Ore on the market, and shippers have the advantage that they can take their own time about moving it. The movement of Ore from Escanaba has not been very heavy for the reason that the offerings of tonnage have been limited and rates stick at $1.35 to Ohio ports and $1.50 to Buffalo. Marquette shippers took a few boats at $1.60.

Pig Iron.— The demand in all grades continues active and the market in a decidedly satisfactory condition, but the situation is characterized by little or anything in the way of new conditions. A prospective advance in freight rates in certain quarters and a scarcity of cars, which has been rather worse than usual during the past week, have not been without some effect. Although $22.50, the last quotation made on Bessemer, still stands nominally, the situation is much better espressed if the figure be made $23. Another meeting of the Bessemer Furnacemen's Association will in all probability be held at Cleveland this week to fix a price in response to certain inquiries for Iron which have been made. Prices on Foundry grades show another advance. Sales of a considerable quantity were made during the past week at the rate of $23 for No. 1 and $22.50 for No. 2. This is for delivery during the first half of the coming year, the major part being apportioned to the first quarter. With the sales of the past few weeks many furnaces are practically sold up for the first three months of 1900. Lake Superior Charcoal is quoted nominally at $24.50 and Gray Forge at $19. On No. 1 Ohio Scotch $21.50 is the generally accepted quotation, while $21 is given on No. 2.

Finished Material.— The market has been necessarily inactive during the week just closed. Inquiry has been good throughout the whole seven days, but there is practically no material to be had. Almost the only transaction of any magnitude was the sale of a consignment of Plate for agricultural implement manufacture. Delivery is to be made during the first quarter of next year. None of the mills can give delivery within a reasonable length of time and in many cases the available supply for the first quarter of 1900 is practically exhausted. All sales for next season's delivery are on the basis of prices at present prevailing and these quotations show no change since last week. Plates are all but sold up for January, February and March, and even Beams and Channels will not be available before December 1.

Old Material.— Dealers report the sales market very active, with the most satisfactory supply which has been obtainable in weeks. At the same time no change in prices has been made, but this is not at all strange when the high scale at which they have been maintained for some weeks past is taken into consideration.

(By Telegraph.)

A meeting of the Bessemer Furnacemen's Association was held here this week to consider further inquiries for Iron. The general sentiment was against any advance over $22.50, at which large sales were made last week, but if, as seems certain, additional sales of some magnitude are made within the next few days an advance in quotations may be looked for. Negotiations are now on for a several thousand-ton sale of Bessemer for spot delivery. Price will be $23.50 to $24.

The capacity of the Ore carrying fleet on the lakes will be increased 240,000 tons next season by two large steamers for which Eddy Bros. of Bay City, Mich., have just let contract to the Detroit Shipbuilding Company. Each vessel will be over 400 feet, and have a capacity of 6000 tons, and cost over $300,000.

Lake Ore rates stronger, as result of advance in grain freights.

St. Louis. *(By Telegraph.)*

Office of *The Iron Age*, 512 Commercial Building, ST. LOUIS, October 4, 1899.

Pig Iron.— The only change in price mentioned this week is an advance of 25c. on Gray Forge. The $1 raise made on all grades by some of the trade did not meet with general action, and is therefore not included in prices below. Some buying has been done right along, but no extensive movement occurred this week. Soft Iron has been in somewhat better supply lately, but that which found its way on the market was quickly taken up. If urgent demands for shipment on old deals count for anything, the business of Pig Iron consumers is not falling off. Coupled with this evidence of activity is the unfortunate fact that Foundry Coke is in short supply. In the past it was not considered necessary to keep or contract for much stock. To-day Coke is in sympathy with Iron and consumers are faced with an actual shortage. Sixty days seems earliest shipping promised and what little Coke can be picked up for prompt delivery commands 25c. to 50c. premium. Connellsville Foundry Coke is quoted at $5.25 and Virginia is $5, both East St. Louis. Higher prices may be looked for. For Pig Iron we quote as follows, on cars St. Louis:

Southern, No. 1 Foundry	$22.25 to $22.50
Southern, No. 2 Foundry	21.25 to 21.50
Southern, No. 3 Foundry	20.25 to 20.50
No. 1 Soft	22.25 to 22.50
No. 2 Soft	21.25 to 21.50
Gray Forge	20.00 to 20.25

Bars.— Cooler weather has made possible an increased output, and heavier shipments are in consequence being made by Bar Iron mills. Consumers, however, are still clamoring for material and probably will continue to do so for several months to come. Jobbers here are proceeding conservatively and have held Bar Iron unchanged at 2.75c., base, full extras, to large buyers. Broken bundles and small orders are charged for at slightly higher prices. Jobbers are buying from one another more frequently, as their stocks are broken; in fact, some sizes of Iron are entirely out. Consumers think less now of extra machine or blacksmith work to bring Bars down to size and further must also blind themselves to waste in material. Mill price remains at 2.35c., half extras, East St. Louis, but it is doubtful whether any specifications for delivery this year would meet with acceptance. Soft Steel in carloads shows but slight difference as against price for Iron, and we quote 2.35c. to 2.50c., half extras, St. Louis; 3c. is asked by jobbers.

Rails and Track Supplies.— Inquiry continues light and no change in price is noted. We quote: Splice Bars, Steel, 2.10c. to 2.20c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.65c.; with Hexagon Nuts, 3.90c.; Spikes, 2.75c.; Steel Links and Pins, 3c. to 3.10c.

Pig Lead.— Quotations remain practically the same as last week, with Soft Missouri at 4.50c., and Chemical at 4.52½c. No large sales have been reported, although, of course, small lots in dealers' hands find movement at the usual margin. Lead Ore is steady at $27 per 1000 lbs.

Spelter.— No activity prevails and quotations are nominally 5.35c. to 5.40c., St. Louis. Extended contracts will not be entered into by smelters. This may indicate a change in the discouraging features which have surrounded the Spelter industry during the past week. It is one of the few metals in which weakness was developed, but there is comfort in knowing that it cannot be entirely laid at the door of the consuming trade.

Zinc Ore.— The Missouri Miners' Association ordered another shut down to take effect October 2, and to continue indefinitely. The payment by smelters of the higher prices for Ore followed the first shut down, and a like effect is expected to follow the present move. A third element, and claimed as the actual disturber, is said to be the speculative broker who sells ahead and

then is charged with trying to depress the market through low purchases made from small smelters in order to cover himself. Smelters were not so averse to paying the Ore price when Spelter was salable at the figures Ore was based on. It remains to be seen in the next few weeks whether the market will recover without a definite understanding between smelters and miners. Also whether the broker will still be a marked factor. Rumors are active that a certain brokerage firm are negotiating for the purchase of an established smelter company. If that is consummated, it is questioned whether they will not adopt the flag of the smelters instead of sailing under brokerage colors.

John H. Heimbuecher, St. Louis, has been appointed to represent the Pittsburgh, Pa., Steel Hoop Company in this territory.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, October 4, 1899.

(*By Telegraph.*)

Pig Iron.—There have been some very heavy sales of Bessemer Pig, amounting to considerably over 100,000 tons. Most of this Iron is for the first half of next year. The leading Western Steel interest bought 50,000 tons, a Valley interest 20,000 tons and a local Steel concern have bought probably 30,000 tons. In the last sale shipments commence at once and for this reason a very high price was paid for the Iron. On the 50,000 tons the price was comparatively low, the buyer having had an option. It is probable that close to 125,000 tons of Bessemer have been sold in the past week. It is stated that practically the entire output of the Valley furnaces for the first half is under contract. The market on Bessemer Pig last week was dull, but these heavy sales have strengthened it and the price of Bessemer to-day is all of $23.25 to $23.50, at Valley furnace. Spot Bessemer for Foundry use has sold in small lots at $24.50, Pittsburgh. Gray Forge is quiet and the market is lower. Valley furnaces are offering a good deal of Forge at about $21, at furnace, but this price is too high, as it has sold at that price f.o.b. Pittsburgh. Southern Forge is offered freely at $20.60, Pittsburgh, but without finding buyers. Foundry Iron is dull and weak. We quote Gray Forge at $20.75 to $21; Bessemer, $23.25 to $23.50, both at Valley furnace; Gray Forge, $21 to $21.50; No. 2 Foundry, $21.50 to $22; Bessemer, $23.75 to $24, Pittsburgh. We note a sale of 20,000 tons of Bessemer at $23.50, delivered Valley, and one of 5000 tons at $23.25, at Valley furnace, deliveries commencing November; also 1000 tons of Gray Forge at $21, Pittsburgh.

Later.—The purchases of Bessemer Pig Iron by the leading Western Steel interest, which is the Federal Steel Company, have been more than doubled and will amount to fully 110,000 tons, and probably more. Another interest has bought 20,000 tons, so that it is safe to say that fully 175,000 tons of Bessemer Iron have been sold in the past week. Any Iron that is sold now would have to be for deliveries commencing in May. The market is very strong, and it is reported that close to $24, at Valley furnace, has been offered for Iron for shipment this year.

Steel.—The market is quiet and only small lots are being sold. One inquiry in the market is for 15,000 tons. We quote Billets at $38.50 to $39, Pittsburgh. Slab sizes are quoted as high as $40, Pittsburgh.

Sheet Bars.—The leading interest quotes Sheet Bars for first half and in large lots at $36, delivered Pittsburgh.

Muck Bars.—The market is dull and weak. We quote nominally at $33, delivered Pittsburgh, for best grades. A good deal of Muck Bar is being offered in this market by Eastern mills.

Skelp. — The market is quiet and prices are lower. Considerable Skelp is being offered in this market by Eastern mills. Grooved Steel Skelp can be bought at 2.15c. and Sheared Iron at about 2.50c., delivered Pittsburgh.

Iron and Steel Scrap. — The Scrap market is not quite as active as it was and prices are about the same as quoted last week.

(*By Mail.*)

The principal event of an otherwise quiet week in the Iron trade has been the purchase of 50,000 tons of Bessemer metal by a leading Western Steel interest, deliveries running over the first six months of 1900. The Iron was sold by the furnaces at a meeting held in Cleveland on last Saturday. The price has not been made public, but is understood to have been at the full market price, though not as high as has been paid for Iron where deliveries commenced this year. It is stated that with the sale of this Iron the Valley furnaces have nearly their entire output for the first half sold, and have very little Iron to spare. The Steel market has been quiet through the week, and 4 x 4 Billets have sold in small lots all the way from $38 to $39, Pittsburgh. There is nothing of special interest in Finished Material, but the lull or quietness referred to last week has become more pronounced. The situation as regards prices is probably fully as strong as it has been at any time. It is a fact, though, that in different lines of Finished Material, such as Pipe, Plates, &c., the mills are evidently catching up on orders, as they are making considerably better deliveries, and there is not nearly so much complaint from customers on this score as there was some time ago. Labor is becoming somewhat restless in the Pittsburgh district, and on Monday morning, October 2, the molders in more than 30 foundries in Pittsburgh and Allegheny went on a strike. They have demanded a minimum wage rate of $3 per day, which has been refused by all the foundries with the exception of probably ten concerns. These have granted the demand, and their foundries are at work. Several officials of the National Foundrymen's Association have been in Pittsburgh this week trying to arrange the trouble but without success.

Ferromanganese.— Ferro continues scarce, and the local producer is a seller in the open market only occasionally. A good deal of foreign Ferro has been sold in this market since the activity in the Iron trade started, owing to the fact that the local producer was sold up and had very little to spare. We quote $100 in large lots and $110 in small lots.

Structural Material.—Some good orders are being booked. A good deal of work is coming up in the East, and a very large tonnage is in the market for a traction power house at Glasgow, Scotland, on which a local mill is reported to have bid. Some other power house work for New York City will likely be placed this month. There is a very good run of small orders, and a considerable tonnage is being placed for small buildings. Both local mills are sold up for some months. We quote Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.75c., Pittsburgh.

Sheets.—The options given by the Sheet mills last spring expire on November 1, and it is understood very active work is going on by those having the consolidation of the Sheet mills in charge. We are advised on very good authority that the deal is practically certain to go through, but perhaps on slightly different lines from those first proposed. Should the options be allowed to expire on November 1, without being exercised, it is certain the mills would ask a good deal higher prices for their plants. There is a fair demand for Black and Galvanized Sheets, but the mills, as a rule, are not selling into next year. It is understood that Sheet Bars are quoted by the leading interest at $36 for the first half. Prices of Sheets quoted by the mills are often higher than the jobbers, who have large stocks bought at low prices and prefer to take their profits. Mills quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 3.15c. to 3.25c., and 3.25c. to 3.35c. for No. 28. Jobbers, however, are quoting as low as 3c. on No. 27, and 3.05c. on No. 28. There is a fair demand for Galvanized Sheets, and we quote at 70 and 10 per cent. off, with 15c. freight in carload lots. In some cases a few sellers are naming slightly lower figures for desirable orders.

Plates.—There is nothing of special interest to note. Some of the mills are catching up on orders and making better deliveries. It is stated, however, that the leading local mill is not quoting on Plates except for delivery in second half of next year. Prices are firm but no higher. We quote Tank, ¼-inch and heavier, 2.90c. to 3c.; Shell, 2.90c. to 3c.; Flange, 3c. to 3.10c.; Marine, 3.10c. to 3.15c.; Fire Box, 3.25c. to 4c., depending on quality, all f.o.b. at mill.

Rails.—Only sales of small lots are being made. There is some inquiry for Rails for export, but so far but little has been done. We quote Steel Rails, Standard Sections, at $33 to $35, f.o.b. mills.

Bars.—The situation in the Bar Iron trade shows great strength, and the output of the mills is practically all under contract for the year. There is a good demand, which, in connection with the specifications coming on old contracts, keeps the mills filled up to their limit, and Bars are hard to get, most of the mills being behind in their shipments. A good deal of tonnage has been placed for delivery into next year and at good prices. We quote Common Iron Bars at 2.25c. to 2.50c., f.o.b. Valley mill, and it is reported that 2½c. has been done on special business. High Grade Bar Iron, made from Muck Bar stock, is held at from 2.50c. to 2.60c. at mills. There is a heavy demand for Steel Bars and prices are very strong. We quote 2.50c. to 2.75c., terms net 30 days at mill. Some sellers are holding firmly for the higher price.

Skelp.—Tonnage has fallen off a good deal. Mills are catching up on old orders and making much better deliveries. We quote Grooved Iron and Steel Skelp, 2.25c. to 2.35c.; Sheared Iron Skelp, 2.50c. to 2.60c.; Sheared Steel Skelp, 2.75c., all f.o.b. buyer's mill, Pittsburgh.

Merchant Steel.—There is a fair demand considering the very high prices. The mills are fully filled up on old contracts and on new business which is being booked every day. Prices are firm and we quote: Machinery Steel, 2.75c. to 3c.; Hard Machinery Steel, 3c. to 3.25c.; Tire Steel, ¾ x 3-16 and heavier, 2.50c. to 2.75c., base; Toe Calk, 2.75c. to 3c.; Plow Steel, 3-16 and heavier, 2.75c.; Sleigh Shoe Steel, 2.50c. to 2.75c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Open Hearth Spring Steel, common, 3.25c. to 3.50c.; Crucible Analysis, 3.50c. to 3.75c.; Lay Steel, Rolled, 3.50c. to 4c.; Hammered, 4.50c. to 5c.; Pick, Cant Hook and Wedge Steel, 4.25c.; Tool Steel, 7c. and upward, according to quality, on which freight not to exceed 25c. is allowed. Terms are usually net 30 days, except Tool Steel, on which 60 days are allowed, or 2 per cent. discount for cash in 10 days.

Pipes and Tubes.—There is a good demand for Merchant Pipe in small lots, but no large contracts have recently been placed. The mills of the National Tube Company are working to their full capacity and turning out a very large tonnage. We quote Black and Galvanized Merchant Pipe at 50 and 10 in small lots, maker's mill, and 50 and two 10's and 5 in carload lots, delivered. We quote Screw and Socket Joint Casing at 40 per cent. off, and Insert Joint at 35 per cent. off, with an extra 5 per cent. to dealers. The Boiler Tube manufacturers met in New York on Tuesday, September 26, and the following discounts were adopted: Iron Tubes, 1¼ to 1½ inch, 40 per cent. off; 1¾ to 2½ inch, inclusive, 50 per cent. off; 2¾-inch and larger, 55 per cent. off; Steel Tubes, 1¼ to 1½ inch, 40 per cent. off; 1¾ to 2½ inch, 55 per cent. off; 2¾-inch and larger, 55 per cent. off, 5 per cent. extra in carloads and usual delivery for small lots. Less than carloads, f.o.b. maker's mill.

Cincinnati. *(By Telegraph.)*

Office of *The Iron Age*, Fifth and Main streets, CINCINNATI, October 4, 1899.

Pig Iron handlers are having a little breathing spell just now. Business continues quiet and agents generally welcome the change after the long continued activity. The volume of trade is being made up chiefly of small orders, and these are from all quarters and classes. There is a very urgent call for almost all grades for delivery this quarter, but the stock to fill these demands is not in sight, except in small quantities and at fancy prices. Indeed, Foundry Grades for the first quarter of next year are almost as scarce as they are for spot shipment. The conditions are practically unchanged, and the situation as strong as could well be imagined. Despite the evident desire that prices go no higher, there is a continuing hardening of the market and the offerings of a week ago at the minimum quotations have disappeared, and it looks as though another rise was inevitable. Forge Irons are quotable at 25c. advance, and Standard Southern Charcoal is also scarcer and higher. There are a few cases reported where consumers have sold their purchases to avail themselves of the enormous profit in the deal. One of these sales was of 1000 tons and another of 1100 tons. Large buyers are not inquiring to any extent, and there is a disposition to let a part of next year's wants go over till several months nearer the point of consumption. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$21.75
Southern Coke, No. 2	20.75
Southern Coke, No. 3	19.75
Southern Coke, No. 1 Soft	21.75
Southern Coke, No. 2 Soft	20.75
Southern Coke, Gray Forge	19.50
Southern Coke, Mottled	19.50
Ohio Silvery, No. 1	30.00
Ohio Silvery, No. 2	29.00
Lake Superior Coke, No. 1	23.50
Lake Superior Coke, No. 2	22.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	$23.25
Lake Superior Car Wheel and Malleable	25.00

Plates and Bars.—The market is exceedingly active, and prices are being strongly maintained. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.50c., with full extras; Bar Steel, in car lots, 2.35c.; small lots, 2.50c.; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 2.90c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 2.95c. to 3.10c.

Old Material.—The market is active and considerably higher. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $18.50 to $19 per net ton; Cast Scrap, $14 to $14.50 per gross ton; Axles, $24 to $25 per net ton; Iron Rails, $26.50 to $27 per gross ton; Car Wheels, $18 to $18.50 per gross ton.

The Belgian Iron Market.

BRUSSELS, September 19, 1899.—The metallurgical statistics for the first half of the year for Belgium are now available, and are submitted below:

Pig Iron.

	1899. Tons.	1898. Tons.	Difference for 1899. Tons.
Mill	155,520	158,560	− 3,040
Foundry	43,100	46,355	− 3,235
Steel	303,665	285,608	+ 18,057
Totals	502,285	490,503	+ 11,782

Wrought Iron.

Plates	54,920	50,105	+ 4,815
Miscellaneous	195,810	203,172	− 7,362
Totals	250,730	253,277	− 2,547

Steel.

Ingots	359,170	307,916	+ 51,254
Finished Steel	309,130	263,525	+ 45,605
Total Finished Iron and Steel.	559,860	516,802	+ 43,058

It will be observed that the Pig Iron production has only increased 11,782 tons, while the output of Finished Iron and Steel has grown by 43,058 tons; in other words, we are dependent more and more upon foreign sources for our Pig Iron. While our exports of Pig Iron have declined from 8358 for the first six months of 1898 and to 6800 in the corresponding period of 1899, our imports have grown from 167,298 tons in the first six months of 1898 to 174,318 tons in the first six months of 1899. This growth has been inadequate, so that Pig Iron has consequently been exceedingly scarce and very dear in Belgium. In order to give an example I may state that Charleroi Mill Iron, which was 58 francs a ton on January 1, 1899, is now very hard to get at 90, and even 95 frances. There is even talk as an entirely natural matter of 100 francs per ton for next year.

As a matter of fact the expectation is that Pig Iron will continue to be very scarce during the first half of 1900. It is true that in Belgium, as well as in the other countries which supply us usually, new furnaces have been built, which would abundantly cover our requirements if they could be put into blast. The scarcity of Coke, however, and its low quality either stops or at least retards the blowing in of new plants. This fuel famine both as to Coal and Coke is the characteristic feature of our situation. During the first half of 1899 the total supply available for Belgium, adding to production the imports and deducting the exports, was 9,618,487 tons, as compared with 10,107,363 tons in 1898, thus showing a falling off of 488,876 tons. This has occurred at a time when both the metallurgical and glass industries have called for increasing quantities. The price of fuel depends entirely upon the caprice of the collieries, who arbitrarily fix values and who sometimes stop a supply altogether under the plea of some urgent work to be done at their shafts, or under other pretexts, which are found to be unjustified when an examination is made. An example may be given which is characteristic. It is well known that the Belgian Coke syndicate have closed with the blast furnaces for the entire year of 1899 at 18 francs per ton, yet Coking Slack has risen steadily until it is now sold at 20 francs per ton; in other words, at a higher price than the raw material for the production of the Coke.

It is evident that under such conditions rolling mills must sell their products at high prices. Muck Bar is

selling currently at 135 francs per ton, the price which a few months ago was quoted for No. 2 Iron Bars. It is true that the latter have also risen. I know as a fect that 210 francs has been paid this week for No. 2 Bars, while on January 1 the current quotation was 140 marks. The mills are discounting a further advance, since they refuse to sell, except for short delivery or for spot.

In order to find a time comparable with that now existing, so far as prices are concerned, it is necessary to go back to the exceptional years immediately following the Franco-German war. Our manufacturers believe that we are only at the threshold of a rising market. As a support for their optimistic views they point to the immense armaments which are now in progress by the greater part of the large powers. They refer also to the progress made in electrical development, which called for equipments and installations into which metallurgical products in great quantity enter. They refer to important public and private works, which are being carried out in all countries. It must be observed that Iron and Steel are more and more needed in all structures. They refer to the equipment called for by new countries, like Russia, China, Japan and others, to the colonizing movement calling for railroads in Africa and elsewhere, to the merchant fleets which are rapidly developing, &c. Finally they draw attention to the favorable consequences, due to the growth and the production of gold in the world, whose effect is so marked in increasing the purchasing power and the rising prices. All this explains the continued prosperity which we are now enjoying, and justifies the hopes of those who believe that we are still far from its greatest development. On the other hand the scarcity of fuel on the Continent prevents overproduction, and not alone assures a maintenance of present prices, but points to a further rise. The latter, however, should not continue so as to make the products unduly dear. This one would be inclined to believe is beginning to tell in Belgium, since the exports have fallen off about 8000 tons for the first eight months of 1899, as compared with the corresponding period of 1898.

Without a doubt Belgian consumption is ample to absorb the excessive output. As a matter of fact our construction shops, machine shops, bridge works, electrical and mechanical plants are occupied to their fullest capacity, but these plants are chiefly dependent upon exports, and the prices for raw material should not rise to such a point that they are hampered in their contest with foreign rivals in the world's market. Briefly, the situation is extremely brilliant, and there is strong belief in its continuing, but it is necessary to guard against any excessive rise in prices.

German Iron Market.

ESSEN, September 18, 1899.—There have been very few changes in the favorable condition of the German Iron and Steel industry, both as to employment of the works and as to selling prices. The scarcity of materials, however, is becoming more and more serious, and the outlook in this respect for the next few months is little calculated to bring about a better feeling among consumers. The time for delivery demanded by the manufacturers has been extended beyond anything before known. Six months and beyond is asked, and this makes the position for the consumer a very difficult one. A part of the public press adverse to syndicates as a matter of principle, are atacking these associations more and more, the reproach being made that they are responsible for the present high prices. As a matter of fact it is certain that values would not be lower if we possessed no syndicates, since the demand has assumed such enormous proportions. The only means of overcoming the scarcity of material in our domestic markets is the slowly growing output of Coal. That the expectations are great for a continuance of our active business for a considerable period is proven by the circumstance that a large Southern German State railroad administration has recently covered its whole requirements up to and including 1892 at present prices. As was reported at the time, the Prussian State railroads covered their requirements of Steel Rails and Ties for several years at prices which are not very much higher than those now realized for Old Material. At a sale of Old Track Material last week, at Frankfort-on-the-Main, Old Rails and Ties sold at 95 to 100 marks per ton. Best Heavy Cast Scrap costs 74 to 75 marks; Melting Scrap, 50 to 51 marks; Good Wrought Iron Scrap, 83 to 85; Heavy Steel Scrap, 78 to 79; Old Iron Rails, 104 to 105 marks.

Since the Iron Ore Syndicate sold its entire production for the year 1900 at the price of 11.60 to 12.50 marks for Raw Spathic Ore, and 16 to 17.50 marks for Roasted Spathic Ore nothing further has been done. All the sales of Foreign Ore for next year, and partly beyond that have been closed. The demand for Ore of all kinds is very heavy, and on the whole is well covered by home production and by imports from foreign countries. The price of Pig Iron has gone higher, and minimum prices to-day are 84 to 85 marks for Spiegeleisen; 78 to 79 marks for High Grade Mill Iron; 74 to 75 marks for Ordinary Mill Iron; 88 to 89 marks for Bessemer Pig; 85 marks for Thomas Pig, low in Manganese; No. 1 German Foundry Iron and Hematite Pig, 93 to 95; Luxemburg No. 3 Foundry Iron, 80 marks, all f.o.b. furnace.

In the Steel market the scarcity has been accentuated. Basic Bessemer Ingots are quoted 105 marks, Blooms, 110 marks; Billets, 115 marks, Sheet Bars, 119 to 120 marks. Acid Bessemer calls for an extra of 10 marks, and Open Hearth Steel for 15 marks per ton. The scarcity of Muck Bar continues. There is none from Rhenish Westphalian works in the market, while 136 marks is demanded for Siegen Muck Bar.

In Foundry Iron the activity continues unabated, there being no indications whatever of a falling off. The mills are steadily falling behind in deliveries, and the scarcity of material is keenly felt, both by dealers and by consumers. There is a famine in Iron Bars and Light Shapes, all the works having orders far into the next spring. The Iron Bar mills are stiff at 200 marks per ton, although dealers show a tendency to demand higher prices whenever they can obtain the material. Steel Bars are quoted 175 marks per ton, but it must be considered that many old orders for Iron Bars are being delivered at 130 marks and for Steel Bars down to 120 marks. Mine Rails cost 145 marks, Angles 210 marks, and Rivets 280 marks.

The Beam business shows extraordinary activity, and the enormous demand can hardly be met by the works. The best price for Beams is still 120 marks, f.o.b Burbach, but an early advance is looked for. Hoops have been getting into better shape, and for the next six to eight months the works are well covered with orders, so that the price has risen to 175 marks per ton.

In consequence of the scarcity of Steel the output of Sheets is falling off and prices are steadily rising. For Steel Sheets 200 marks is quoted, while Iron Sheets are 250 and upward, but there are still many orders to be filled at 135 to 160 marks.

There has been again a movement to bring about a syndicate of the Sheet mills. There is an extraordinary demand for Plates, but the syndicate is holding back so far as orders for long delivery or for large quantities are concerned on account of the uncertainty as to the prices of Coal and other raw material. For all Plates the price is now 180 marks. Structural Plates are quoted 195 marks with test, 190 marks without test, and 205 marks for Shell.

So far as Wire Rods are concerned the full requirements of consumers for the first half of 1900 have been covered at 175 to 178 marks, after the syndicate had succeeded in getting the members to give up foreign orders for the sake of taking care of the home consumers. The demand from foreign countries has been very active, and the domestic prices are readily realized. Wire Nails have been rising on account of the heavy home demand, the price now being 230 marks per ton.

The car works are very actively engaged, but their full capacity cannot be utilized on account of the scarcity of Raw Material. At a recent letting of the Saxon State Railroad the Baldwin Locomotive Works made the second lowest bid, but there is little chance that German roads will place locomotives abroad. The market for Cast Iron Pipe is lively, and the demand is so heavy that the shops can only gradually fill orders in spite of being driven at their full capacity. The prices have accordingly advanced.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, October 4, 1899.

Pig Iron.— The market has been quite active, and a number of sales of fair lots have been made for delivery during the first six months of 1900. Some of the Eastern furnaces have been in the position also to place orders for earlier delivery. A good many of the coast foundries who depend upon stocking up for the winter business during the fall are still very bare of supplies, and are facing a somewhat serious situation. We note a sale of 5000 tons of Low Phosphorus Iron at $26.75, Eastern furnace. We quote as follows: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, $23 to $23.50; No. 2 X, $22 to $22.50; No. 2 Plain, $20.75 to $21.25, and Gray Forge, $19.25 to $19.50. Southern brands are quoted: No. 1 Foundry, $23 to $23.50; No. 2 Foundry, $21.75 to $22; No. 1 Soft, $21.75 to $22.25; No. 2 Soft, $20.75 to $21.25; No. 3 Foundry, $20.75 to $21.25, and Gray Forge, $20.25 to $20.50.

Steel Rails.— The manufacturers in conference in this city last week have, as the result of an interchange of opinion, made the price of Standard Rails $33, at mill. A large number of the leading roads are now in the mar-

ket, and it is expected that a good deal of tonnage will be booked, in addition to that already entered. Light Rails have sold as high as $38 to $40. Angle Bars have advanced to 2.25c. for large lots and may be quoted 2.25c. to 2.50c., small lots for prompt delivery having been placed at close to 3c. We quote Spikes, 2.60c. to 2.75c.

Finished Iron and Steel.— As yet the order for the material for the large power house has not been placed, nor have any large contracts been taken during the past week. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 3c. to 3.10c. for Tank, 3.15c. to 3.25c. for Shell, 3.35c. to 3.40c. for Flange, 3.45c. to 3.55c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3.10c. for C. H. No. 1, 3.60c. for Best Flange and 4.10c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 1.95c. to 2.10c., on dock. Soft Steel Bars, 2.40c. to 2.55c.; Hoops, 2.75c., base, delivered.

Metal Market.

Office of *The Iron Age*, 232-238 William street, NEW YORK, October 4, 1899.

Pig Tin.—The two holidays at the close of last week cut the time for operation rather short. On Monday the market opened considerably lower than before the holidays. This was due chiefly to a heavy decline in London. A reaction set in to-day, however, and at the close the market was quoted 32¼c. to 32½c. for spot. London closed to-day at £146 15s. for spot and £146 12s. 6d. for three months' futures. The monthly statistics which were published by the Metal Exchange on Monday created a decided sensation in the market. They were surprising, inasmuch as that they showed an increase in the total visible supply of 1124 tons above last month. This increase was brought about through heavy shipments from the Straits being about 800 tons greater than for the corresponding period of last year. The heavy falling off of European deliveries is also responsible in a measure. It is stated abroad that the high prices interfere with consumption, and that the tin plate manufacturers in Wales are fully covered up to the end of this year, and will not engage in further purchasing for next year. It is also stated that the Dutch Trading Company and the Biliton Company have announced that they will increase their sales, and that from these two sources additional supplies to the extent of 2000 tons must be counted on for next year.

Copper.— While the market here is unchanged and dull, it can scarcely be termed weak. Although some Lake is still offered at 18⅜c., the ruling quotation which is held out by the large companies is 18½c. Electrolytic Cakes, Wire Bars and Ingots are quoted at 17¾c., and Casting is unchanged at 17½c. Until yesterday London declined steadily and quotations went as low as £75, but after the announcement of monthly statistics the market recovered. These statistics show a heavy decrease in exports from this country. To-day the London market closed £75 18s. 9d. for spot, and £76 8s. 9d. for three months' futures. Best Selected has declined 10 shillings, and is quoted to-day £80 flat.

Pig Lead.— The market is entirely unchanged, with prices 4.60c. to 4.65c. New York, and 4.50c. to 4.55c., St. Louis. The figures given by the American Smelting & Refining Company are 4.60c. for spot and futures, New York, and 4.55c., St. Louis. The London market has advanced considerably, especially for spot delivery, which is up to-day to £16 5s., while forward delivery is £15 15s.

Arrivals at this port for the month of September were:

From Mexico	about 3,500 tons.
Europe	about 275 tons.
Mexico	about 1,500 tons Ores.

Exports in bond from this port amounted to 4455 tons of 2240 lbs.

Spelter.— Was somewhat lower shortly after our last writing, but has since advanced on account of the closing down of the mines. Business is not active, however. We quote 5.45c. to 5.50c. for spot, New York, and 5.40c. St. Louis. In London, after a decline to £21 15s. the metal recovered to £22 5s., which was to-day's closing price.

Private advices from Joplin state that about 90 per cent. of the mines have actually shut down. Several of the large smelters have withdrawn from the market entirely, and the fight is on. Developments will be watched with interest.

Antimony.— Is unchanged. Hallett's and Cookson's are firm at 9¾c. and 11c. respectively.

Nickel.— Lots larger than 1000 lbs. are selling at 36c. to 40c., while smaller lots command 40c. and upward, according to quantity and delivery.

Tin Plate.— Is without change. The American Tin Plate Company are still quoting $4.82½ to $4.87½ per box for 100-lb. coke, New York delivery.

PERSONAL.

Chas. A. Fry, chief engineer of the Link Belt Engineering Company, has returned from a two months' trip abroad.

Charles Churchill, managing director of Charles Churchill & Co., Limited, of London, proposes to sail for New York on the "Lucania," due on the 14th inst. During his stay of about one month Mr. Churchill's business address for correspondence will be care of Hance Bros. & White, 61 Maiden lane, New York.

Chas. A. Bunting, for many years with the Pennsylvania Steel Company, has opened an office in Philadelphia.

Gaston C. Raoul has been appointed purchasing agent of the Mexican National Railroad Company, with headquarters at 6 Wall street, New York.

C. Erbsloh, a representative of the Krupp works, Essen, Germany, is in this country visiting the principal manufacturing centers.

E. E. Linthicum has succeeded D. R. P. Dimmick as resident manager of the plant of the United States Pipe & Foundry Company, at Anniston, Ala., assuming the duties of his new position on October 1.

The Cincinnati Planer Company, Cincinnati, Ohio, have for a week entertained C. Staib, chief engineer of the famous locomotive works of A. Borsig, Berlin, Germany, bearing letters of introduction from A. De Fries, factors of American machinery in Europe.

Theo. D. Morgan has resigned from the district managership of the Anderson, Middletown and Atlanta, Ind., plants of the American Tin Plate Company and become general manager of the Champion Iron & Steel Company, now erecting a Tin Plate plant at Muskegon, Mich. Mr. Morgan was vice-president and general manager of the Atlanta Steel & Tin Plate Company before the recent consolidation.

In New York's welcome to Admiral Dewey the machinery trade was represented by Charles A. Moore of Manning, Maxwell & Moore, who was a member of the committee who received the Admiral.

Sidney Dillon Ripley was elected a director of the Taylor Iron & Steel Company at their last board meeting, in place of Percival Chrystie, resigned, who was made superintendent.

John Horner of New Castle, Pa., has been made manager of the new tin plate mills and stamping works at Granite City, Ill.

Frank S. Wetherbee, of Wetherbee, Sherman & Co., Port Henry, N. Y., is expected to arrive from Europe next week.

B. Hochschild of the American Metal Company has just returned from a three months' business trip abroad.

The Pressed Steel Car Company at Joliet.— The Pressed Steel Car Company have announced that plans have been completed for a 20-acre addition to their plant at Joliet, Ill., for the purpose of manufacturing cars in addition to the miscellaneous parts now manufactured at that point. The car capacity will be 30 finished cars per day. A contract has been made with the Illinois Steel branch of the Federal Steel Company to supply the 400 tons of steel plate per day required, and it is expected that cars will be turned out by the month of December. The Pressed Steel Car Company will have, upon completion of the Joliet addition, a total capacity of 130 finished cars per day, and the amount of steel plate required for their three car plants will be approximately 1600 tons per day, all of which, except the amount noted above, will be furnished by the Carnegie Company under the ten year contract announced some months ago. The new plant of the Pressed Steel Car Company, at McKee's Rocks, Pittsburgh, has already done some preliminary work, and it is expected the manufacture of steel cars on a large scale will be started this week. At the present time the Pressed Steel Car Company have orders for 500 steel cars for the Pittsburgh & Lake Erie Railroad, to be constructed on Lake Shore specifications, 1000 standard steel cars for the Chicago, Lake Shore & Eastern Railroad and about 2000 cars for other roads, in addition to many smaller orders.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING OCTOBER 4, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
$29,000,000	Am. Car & Foundry, Common..	1,861	16 -16⅛	.....	.....	15¾-16⅛	.....	15¼-16
29,000,000	Am. Car & F'y, Pref. (7% Non-Cu.)	2,272	62 -63	.....	.....	61 -61⅜	-61	-61
19,000,000	Am Steel Hoop, Common.....	16,200	42½-43⅜	.....	.....	42⅛-43⅞	41 -42	40¾-43
14,000,000	Am. Steel Hoop, Pref. (7% Cu.)	2,845	84¼ 85	.....	.....	-85	84 -85½	84 -85
50,000,000	Am S & W., Common.....	21,700	49¼ 51	.....	.....	48⅛-50¼	47⅛ 48⅜	48⅛-49⅛
40,000,000	Am. S. & W., Pref (7% Cu.)....	2,210	94¾-95⅝	.....	.....	95 -95⅜	93⅜-93⅛	94 -94⅝
28,000,000	Am Tin Plate, Common, N. Y..	1,420	38 -38¼	.....	.....	38⅛-39	37⅛-38⅛	-38
18,000,000	Am. Tin Plate, Pref., N Y. (7% Cu.)	1,412	.....	.....	.....	85⅞-86	84 -85¼	84⅝-85
28,000,000	Am. Tin Plate. Com., Chic.....	960	.....	.....	38¾-39½	38 -38¾	-37¾	37⅛-38⅛
18,000,000	Am. Tin Plate, Pref., Chic. (7% Cu.)	190	.....	.....	.....	.....	85 -85½	-85
7,500,000	Bethlehem Iron†.....	331	-61½	.....	.....	-61	60¼-61	.....
15,000,000	Beth. Steel, Par $50, $1 paid in.	470	.....	.....	.....	-21¾	20⅛ 21	20 -20⅛
7,974,550	Cambria Iron, Phila*.....	286	44⅞-45	.....	.....	-44⅞	43⅞-44	.....
16,000,000	Cambria, Steel**.....	21,347	24¼-25	.....	.....	23¼-24⅛	22⅞-23⅛	-23⅛
11,000,000	Col. Fuel and Iron.....	9,545	56⅜-5 ¼	.....	.....	54⅝-57	52¼-54⅛	54 -55¼
46,484,300	Federal Steel, Common.....	20,613	52½-53⅜	.....	.....	51⅝-52¾	51⅛-52⅛	52⅜-53⅛
53,253,500	Federal Steel, Pref (6% Non-Cu.)	5,050	78¼-78⅞	.....	.....	77 -78	76¾-77⅛	77⅛-78
32,000,000	National Steel, Common, Chic..	3,230	.....	.....	51¼-51⅝	50⅛-51¼	49¾-51⅛	50 -50¼
27,000,000	National Steel, Pref., Chic (7% Cu)	540	96 -97	.....	95 -95⅞	-96½	-95	.....
32,000,000	National Steel, Common, N. Y.	3,930	51 -51¾	.....	.....	50¾-51	50 -50½	50 -51
27,000,000	Nat'l Steel, Pref, N. Y, (7% Cu.)	4,140	-96	.....	.....	.....	-95	.....
5,000,000	Penna, Common, Phila.....	.....	.....	.....	.....	.....	.....	.....
1,500,000	Penna., Pref., Phila.....	.....	.....	.....	.....	.....	.....	.....
12,500,000	Pressed Steel, Common.....	1,050	.....	.....	.....	55 -55½	55⅛-56	-55⅛
12,500,000	Pressed Steel, Pref. (7% Non-Cu.)	400	.....	.....	.....	.....	87⅛-88	-88
27,352,000	Republic Iron & Steel, Common.	4,005	-28	.....	.....	26¼-27⅛	25⅛-26	26 -26⅛
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	960	72½-73	.....	.....	70 -71	70 -70⅛	.....
20,000,000	Tennessee Coal and Iron.....	22,495	112⅛-116½	.....	.....	109 -114⅛	109⅛-112	113⅛-115
1,500,000	Warwick Iron & Steel, (par $10)	.....	.....	.....	.....	11¾-12	-11¼	-11¾

*Par $50. **$1.50 per share paid in. †6% guaranteed by Beth. Steel Co. Late Philadelphia and Chicago sales by telegraph.

Bonded Indebtedness: Am S. & W., $30,656; Am Tin Plate, none; Am Steel Hoop, none; Cambria Iron Co., $2,000,000 6% debenture 20-year bonds, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co. $13,300,000 Illinois 5%, $7,417,000 E. J. E. R. R 5% $1,000,000 Johnson 6%, $6,732,000 D & I. R. R. R 5% $1,000,000 2d D & I R R. R. 6%, $10,000 land grant D. & I R. R. R. 5%; National Steel, $2,561,000 6%; Tennessee C. I. & R R Co., $8,367,000 6%, $1,114,000 7%, $1,000,000 7% cu. pref.; Pennsylvania Steel, $1,000,000 Steelton 1st; $2,000,000 Sparrow's Point 1st, $4,000,000 consolidated, both plants; Bethlehem Iron $1,351,000 5% maturing 1907 Interest and principal guaranteed by Bethlehem Steel Co Republic Iron & Steel, none; Warwick Iron & Steel none Colorado Fuel & Iron Co.: Col. Fuel Co. Gen Mort 6% $880,000; Col. Coal & Iron Con Mort. 6% $2,810,000; Col. Fuel & Iron Gen. Mort. 5% $2,303,000. Also outstanding $2,000,000 preferred stock with accumulated dividends of $640,000 to June 30, 1899.

Iron and Industrial Stocks.

The past week has been much broken by the holidays. On the whole, the movement has been principally affected by the advance in money rates, and by the uncertainty as to developments in the Transvaal crisis. The latter affects us through the marketing here of American securities, in which foreign investors are largely interested.

The directors of the Underground Cable Company of Pittsburgh, Pa., have declared a 2 per cent. quarterly dividend, payable October 10. This is equivalent to 12 per cent. on the old capital, and requires $30,000, against a former disbursement of $20,000.

The net earnings of the Westinghouse Electric & Mfg. Company for the four months ending July 31 amounted to $558,431, or at the rate of over $1,600,000 per year. Their interest requirements amount to $175,000, and the first preferred dividends call for $280,000, a total of about $455,000; this leaves $1,200,000 surplus. Of this amount the second preferred is entitled to $960,000, or 12 per cent. of the $8,000,000 outstanding stock. It is provided that after 7 per cent. is paid on the second preferred stock the first and second preferred then share equally.

The American Tin Plate Company have declared a quarterly dividend of 1¾ per cent. on their preferred stock, payable October 30. Books close October 20 and reopen October 30.

The Cambria Steel Company have declared a dividend of $2.50, payable November 15 to stock of record October 31. The company have called for an installment of 1½ per cent., payable December 1.

The following are the closing quotations of a number of stocks:

	Bid.	Asked.
International Silver, Common	11	15
Otis Elevator, Common	33	35
Otis Elevator, Preferred	95	97
H. R. Worthington, Preferred	110	...
Cramp's Shipyard Stock	83	86
Pratt & Whitney, Common	3½	5
Pratt & Whitney, Preferred	38	48
E. W. Bliss, Common	137	...
E. W. Bliss, Preferred	125	...
U. S. Projectile	100	...
Barney & Smith Car, Common	21	25
Barney & Smith Car, Preferred	81	86
International Pump, Common	23	25
International Pump, Preferred	71	73
New Haven S. & I	6¼	6⅞
Susquehanna I. & S	6⅞	7
Diamond State Steel	7⅜	7½
Tidewater Steel	15⅞	15¾
Sloss & Sheffield Steel & Iron, Common	38½	40
Sloss & Sheffield Steel & Iron, Preferred	78	80
National Tube, Common	45½	46½
National Tube, Preferred	98	99

Trouble has broken out among the molders employed in the Pittsburgh district and a large number of the foundries have been compelled to close down owing to the men going on a strike for an advance in wages. Some time ago the molders made a demand for a minimum rate of $3 per day, time and half time for extra work and double time for Sunday work. This demand has been refused by all the foundries in Pittsburgh, with the exception of a few who have granted it and whose foundries continue at work. The following concerns granted the demands of the molders: Philips Mine Supply Company, G. A. Jelly & Co., Lincoln Foundry Company, Union Steel Casting Company, Westinghouse Electric & Mfg. Company, Scaife Foundry & Machine Company, Marshall Foundry & Construction Company, Enterprise Foundry Company, and Dilworth, Porter & Co., Limited. The core makers have been given an advance in wages, but have agreed to go on a strike in sympathy with the molders if requested.

New Blast Furnaces and Basic Open Hearth Steel Plant to be Built by Carnegie Steel Co.

The Carnegie Steel Company of Pittsburgh have decided to build two more blast furnaces, at the Carrie plant, Rankin, Pa. These two furnaces will be the largest ever built, and will be 106 feet high and 24 feet in diameter at bosh. They will turn out 1400 tons of Bessemer iron every day. A new bridge will be built from these furnaces across the Monongahela River, to take hot metal direct to the Homestead Steel Works. At Duquesne Steel Works a new basic open hearth steel plant of 14 50-ton open hearth furnaces and a large blooming mill are to be built. This mill will be one of the largest ever built, and will be a duplicate of the one just completed at Homestead Steel Works. These improvements and additions will give the Carnegie Steel Company a capacity for turning out over 3,000,000 tons of finished material annually. The open hearth plant at Duquesne will be built to furnish the trade with basic open hearth blooms, billets and slabs.

The Universal Fuel Company of Chicago are negotiating with local parties for the erection of coke ovens under the Hemingway patents at Oskaloosa and Ottumwa, Iowa, to make coke from native coal. Names are withheld until the details are all arranged. It is the policy of the Universal Fuel Company to encourage the investment of local capital in the erection of coke ovens in the West except in Illinois. They propose in that State to operate the ovens themselves in producing coke.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, October 4, 1899.

Another extremely busy month has passed and more intensified has become interest in the oft repeated interrogation, How much longer will present conditions last? To most minds the answer is as far distant as ever. The basis of the majority of replies is mere speculation, shaped of course to best accommodate the interests of the speculator. Certain well-known representatives in the trade hold that the measure of prosperity being enjoyed at present will continue over the first quarter of next year and that then the position will be ripe for a change. Others are of the opinion that the halt is yet far distant.

The healthy demand for machinery which has steadily increased throughout the last year is evidence of urgent need. It is generally conceded that machinery and especially machine tools are not bought until requirements actually demand their purchase. That machinery is needed most urgently at present is indicated by the orders that are being placed for delivery months off and at prices far in excess of those ruling a year ago. In exceptional cases only do the orders emanate from sources where new projects are in contemplation. In almost every instance the machinery is to be added to existing plants. This, it is argued, indicates that numerous old properties are being placed in condition for increased production. These plants, it is held, when in operation will aid materially in easing the market and lessening the pressure, and when this has been accomplished things will take a downward trend with gathering impetus. But after all it is all speculation. As to prices, there are concerns who think that they have not yet reached the limit. The Shafting Association have advanced prices another 10 per cent. for cold rolled, cold drawn and turned steel shafting. This advance went into effect on September 29. The Dodge Mfg. Company have also raised their prices 10 per cent. on pulleys, hangers, &c.

P. J. Westphal of Holyoke, Mass., builder of grinding machines, advanced prices 10 per cent. on October 1.

Announcement is made by the Hancock Inspirator Company of Boston, Mass., to the effect that they have terminated all agencies and are selling their apparatus direct to the trade only.

It is said that the specifications for the engines to be installed in the proposed new power house of the New York Light, Heat & Power Company are ready. This concern was formerly known as the Edison Electric Illuminating Company. The power station is to be erected on First avenue, between Thirty-eighth and Thirty-ninth streets. The engine plant will include 16 units of 5200 horse-power each. Thayer & Co. recently received the order for boilers for this station.

It is expected that the orders for the accessories to the great Manhattan Railway Company's power plant will be forthcoming very shortly. The principal items in the mechanical line yet to be ordered are the pumps, condensing plant, fuel economizers and coal and ashes conveying machines. Special designs are being submitted for the electrical generating machinery. We are informed that the bids for the electrical machinery were to have been taken up last week, but have not heard that awards have been made.

Friederich Carl Heise of 4 Schlegel street, Berlin, Germany, is looking for a line of American machine tools and specialties which he wishes to secure the German agency for. His American correspondent is C. F. Gessert, whose offices are located at 42 Dey street, New York. Mr. Heise is a machinery merchant.

Charles R. Ross, constructing engineer, Madisonville, Ky., is in the market for a complete equipment of second hand machinery for a machine shop.

P. G. Rimmer, formerly with the Deane Steam Pump Company, has been admitted to the firm of Hamilton & McClave of 141 Broadway. The style of the firm is now McClave, Hamilton & Rimmer. In addition to their steam and electrical engineering work, the firm are now in the pump field. The new company are the Eastern representatives for the Snider-Hughes Company of Cleveland, Ohio. The latter concern are builders of pumping machinery and air compressors. The New York firm have already booked orders for municipal pumping stations for Hazelton, Pa., and Boise City, Idaho, and they have just closed a contract with Jamaica city, L. I., for a 4,000,000 gallon plant. They have also contracted with the New York Steel & Wire Company to furnish a 150 kw. Thomson-Ryan generator, direct connected to a McEwan engine. The installation will be made in the new plant which the New York Steel & Wire Company are erecting at Astoria, L. I.

Billings, Clapp & Co., whose headquarters are at Boston, are building an extensive addition to their Tiverton, L. I., plant. The American Blower Company of 141 Broadway were awarded the heating and radiating contract.

Contracts for the lighting plant to be installed in the new Battery Park Building, which is being erected on the former site of the old Cheseborough Building, were awarded to the Payne Engineering Company of 120 Broadway. There will be three Payne high speed engines, direct connected to Bullock generators. The Payne Company were also awarded the contract for the lighting plant for the John Wanamaker estate at Chelton Hills, Jenkintown, Pa. Among other contracts received by this company were: International Paper Company, Turner Falls, Pa., mills, three 175 horse-power Payne Corliss engines; one 200 horse-power electric railway engine for the Huntsville Traction Company, Huntsville, Ala., to be direct connected to Siemens-Halske generator, and one 100 horse-power traction engine for the New York & Westchester Traction Company, to be installed at Mount Vernon, N. Y.

Contracts for 50 high speed engines which will operate fans and circulating pumps on the 20 torpedo boat destroyers building at various yards for the navy have been given to W. D. Forbes & Co., of Hoboken, N. J. This company have also contracts for some 20 electric lighting engines to be installed on various craft building for the navy, and a considerable quantity of refrigerating machinery also for the navy.

The Ocean Steamship Company, who operate steamers between New York and Savannah, are overhauling their fleet, and awarded a contract for ventilating apparatus to the American Blower Company.

The Garvin Machine Company of Spring and Varick streets, New York, received a large machine tool order for the shop equipment in connection with the Sao Paulo, Brazil, Light, Heat & Power Company's plant. The New York offices of the latter company are located at 621 Broadway. All of the machinery required has not yet been ordered.

The Ottawa Carbide Company, Ottawa, Canada, have placed their order for new buildings with the Berlin Iron Bridge Company of East Berlin, Conn. There will be an 80 x 286 feet furnace building, a 38 x 80 feet grinding room, and a 35 x 80 feet breaking room. The buildings will be from three to five stories high.

The bids received by the Navy Department for the new dry dock at League Island Navy Yard were rejected and new bids will be received on October 21 by Mordecai T. Endicott, Chief Bureau Yards and Docks, Navy Department, Washington. The bids were too high.

On October 31 bids will be received by the Supervising Architect, Treasury Department, Washington, D. C., for low pressure heating and ventilating apparatus to be installed in the United States Post Office Building at Buffalo, N. Y.

Chas. G. Eckstein, of Berlin, whose New York address is 249 Centre street, is now in this country. He desires to arrange for agencies in Germany and Austria for special machinery for boiler and bridge work.

Francis D. Cooper Company of Tacoma, Wash., ask for duplicate copies of catalogues relating to machinery, railroad equipment and tools for an importing firm in Tokio, Japan.

The largest shipbuilding contract recently let on the Great Lakes was concluded this week, whereby the Detroit Dry Dock Company, a branch of the American Shipbuilding Company, have contracted to build for Eddy Brothers of Bay City, Mich., two steel steamships, fully equipped with modern appliances, and to deliver them by the opening of navigation next April. Each vessel will be 635 feet long and 50 feet beam, and capable of carrying a larger cargo than any ship now afloat on the lakes. The cost of the two vessels will be about $640,000. Outside of this order, the Detroit Dry Dock Company have other contracts on their books which bring the total amount of work in hand up to nearly $1,500,000. So great has become the demand for ships and repairs that the company are contemplating building new dry docks 500 feet in length.

At the meeting of the directors of the United States Cast Iron Pipe & Foundry Company, who were in session at 80 Broadway last week, it was decided to postpone the declaration of a dividend until some future date. Plans were perfected for future operations, and details were arranged for the division of labor. The next regular meeting will be held in October. The dividend question will come up again at this meeting. It has been decided to list the stock of the company on the New York Stock Exchange, and a statement which is to be submitted to the Listing Committee is now being compiled.

The *Automobile Magazine* is a newcomer among industrial serials. It is published by the United States Industrial Publishing Company of New York.

The Chicago and Northwest Machinery Market.

Office of *The Iron Age*, 805 Fisher Building, CHICAGO, October 4, 1899.

September was another active month in the machinery trade. Manufacturers of engines and boilers have been driven to their utmost capacity in endeavoring to supply the wants of their customers. In some instances engine builders have been obliged to refuse to take additional business for delivery this year, having more orders now than they will be able to fill. Builders of heavy engines are further behind than those who make engines of medium and small sizes. Those who need heavy engines will be doing well if they can get them within a year from the date of contract. Boilers are now being ordered for delivery next spring. The pressure for gas and gasoline engines is also sharp, keeping the various works well employed. Appliances for power transmission naturally share in the activity enjoyed by apparatus for the generation of power. Makers of shafting, pulleys, belting, &c., are having a large trade. Likewise, the demand for steam specialties, such as heaters, separators, valves, gauges and fittings, has been as strong as at any previous time in the year, keeping manufacturers and dealers on the run to satisfy the requirements of the trade.

Manufacturers of steam pumps have had an almost phenomenal business. September orders have been so numerous in this line that establishment after establishment reports the heaviest trade in its history. Some of the best known makers of pumps, whose facilities have been largely increased in recent months, report more business on their books than can possibly be filled this year, with inquiries still flowing in.

Pneumatic tools is another branch in which trade has bordered on the phenomenal. These tools have won their way to high favor in all kinds of shops in which a portable machine is desirable for drilling, riveting, chipping, calking, &c. Every month sees their field of usefulness widening, and the demand for them increasing, both in this country and abroad.

The machine tool trade continues in about the same condition as reported in previous months. The volume of business is large, orders being frequent for additions to shop equipment, and the advanced prices now asked being paid without demur if prompt or reasonably early delivery can be made. Machine shops are so driven with profitable work that the price of a tool cuts but little figure if it can be had when needed. Large tools are still scarce, with builders far behind on deliveries. Dealers are inclined to the belief that the export demand will be curtailed by the high prices now ruling, and if this view is correct better deliveries will then be made to home buyers.

The activity in the foundry trade brings with it a sharp demand for foundry equipment. Makers of molding machines report heavy orders, caused partly by the scarcity of molders and partly by the desire of foundrymen to get out a larger product at reduced cost.

The bicycle trade shows probably the lightest demand for machinery of any line in which machine tools are used. This is ascribed to the pending consolidation of leading bicycle makers, causing the deferring of purchases of equipment until the arrangements of the new company are completed.

Interesting information with regard to special lines of trade will be found in the following paragraphs:

The Edward P. Allis Company, Milwaukee, Wis., say that the most notable business they have recently received is an order from the Glasgow Corporation Tramways of Glasgow, Scotland, for two vertical compound engines, each of 4000 horse-power. This order was placed in the face of the most severe competition from English and Scotch builders. The Sloss Iron & Steel Company of Birmingham, Ala., have placed an order with them for three blowing engines with air cylinders 84 x 60 inches, and the Pennsylvania Steel Company have ordered an extremely large rolling mill engine, with cylinders 36 and 72 x 72 inches. They observe no abatement in the amount of business still offering.

The Adams Company, Dubuque, Iowa, who manufacture molding machines for use in iron and brass foundries and milling machines to be attached to iron planers, say that never in their experience did they have so many orders on file for each of these lines of machines. Recently they shipped 74 molding machines to New Britain, Conn., and now have an order for 64 machines to go to Milwaukee, Wis. Nearly all of the orders that they are receiving are from parties who are enlarging their present plants. They have recently sold a milling machine to the Government, to be used in Watervliet Arsenal. All customers seem to be in a great hurry for their machines, and claim that they need them at once to aid them in getting out economically the large quantity of orders that they have on hand. They see no sign to indicate any slackening of work in the near future, but look forward to a certainty of running their factory to its full capacity for many months to come.

Chas. H. Besley & Co., Chicago, who are manufacturers of machinery, as well as dealers in machinists' and mill supplies, say they have not only all the business they can handle but have more offered than they can take care of. They are just shipping six large Gardner grinders to one customer, and other products of their make are going out in the same proportion. They are shipping regularly to foreign countries, finding the export demand keeping up very well. The trade in machinists' tools and mill supplies is fully as good as at any time previous this year, which has been one of the best periods in their history.

The Marshall & Huschart Machinery Company, Chicago, say that September was a month of decided activity, comparing very favorably with August. Not so many large sales were included, buying having been distributed among more customers. Plenty of inquiries are being received, but many are for machines on which the delivery required cannot be made. They find a constant enlargement of old plants, from which they are receiving their share of business in machine tools.

J. B. Doan & Co., machine tools, Chicago, find September one of the best months they ever had. They furnished a good outfit of tools to the Plano Mfg. Company, at West Pullman, which was the most important sale of the month, being an addition to the machine shop equipment of that company. They furnished several small outfits for new machine shops for repair work, but most of the month's business was done with old established concerns. Some deals are pending for machinery for automobile manufacture. The bicycle demand has been light, few machines having been sold for this purpose.

The Vilter Mfg. Company, Milwaukee, Wis., report an exceptionally heavy demand for their refrigerating and ice making machinery, Corliss engines, &c. Orders for refrigerating machinery have been received from all sections of the country, as, for instance, as far east as Bethlehem, Pa., north to Houghton, Mich., west to Billings, Mont., and south to San Antonio, Texas. These orders for machines run in varying sizes up to 100 tons capacity. The orders for engines have been of a remarkable character, including many heavy duty engines. Quite a number of twin Corliss engines, 24 x 48 inches, have been ordered, as well as numerous smaller engines, running from 18 x 42 inches down to 14 x 30 inches. Their customers for engines embrace manufacturers in various lines, as well as grain elevators, brewing companies, hotel companies and the Louisiana State University, at Baton Rouge, La.

The Witte Iron Works Company, Kansas City, Mo., makers of gas and gasoline engines, say that business could be better, and would be were it not for the extremely high prices of raw materials, also the delay in getting these materials, and they are having order after order canceled by not having the raw material in time to finish the goods. This has led them, as well as nearly every one else, to place orders far in advance of their wants, and this of course stalls the mills. They believe that it is only a question of time until this ordering ahead will stop, and stop very suddenly, as it is simply a scare, and the only question is how long will it last.

McDowell, Stocker & Co., Chicago, report a satisfactory business for September in machine tools, but it was of a pick-up character, coming from many sources. Inquiries are still fair, but their number appears not so great as two or three months since. They believe that manufacturers will now have an opportunity to catch up with orders. They believe also that the advance in price has checked the foreign trade, which will also enable manufacturers to fill domestic orders a little more promptly. It is, however, still difficult to get deliveries, especially on large machines.

The Pearson Machine Company, Chicago, report the demand for their tools picking up considerably, running far ahead of business during the summer months. Their bicycle trade has latterly been light, owing to the pending consolidation of bicycle factories, but they look for a better business as soon as this matter is arranged. Some important sales were made during the month to

the general trade and for export, the particulars of which cannot yet be published.

The Chicago Pneumatic Tool Company, Chicago, state that business for September showed a still further increase over August. In fact, each succeeding month's business is larger than that of the preceding month. They have received an order for 26 additional pneumatic tools, including drills, hammers and riveters, for the Union Iron Works, San Francisco, and also orders for additional pneumatic tools at several of the United States navy yards. The new long stroke riveting hammer recently brought out by them was put in use at the works of the Pressed Steel Car Company, Pittsburgh, and, after a trial of ten of them for three months, that company have just placed their order for 60 more, making 70 in all that will be in use at their plant in Allegheny. Business is coming largely from old established plants, which are adding pneumatic tools as new equipment, and it is drawn from all over the country, which indicates that every section is sharing in the general prosperity. They do not apprehend any check to business in the near future, the greatest menace that they see in that direction being politics and labor agitation.

The American Steam Pump Company, successors to the Battle Creek Steam Pump Company, Battle Creek, Mich., say that the volume of business in September was as large as during the preceding months of the present year. They are now about four months behind their orders, and in their judgment no slacking up in the demand will occur for some time to come. The new manufacturing establishments now building are retarded by lack of prompt delivery of material and machinery. They believe that the one thing most likely to check the present prosperity of this country would be a change in the present policy of the Government.

A. Sorge, Jr., & Co., heaters and separators, Chicago, find no let up in the demand for the machinery which they are handling. On the contrary they observe a steady increase in calls for bids, and particularly is it noticeable that manufacturing plants are largely increasing their capacities, which is evidenced by the additions which they are making to their power plants. The total of business keeps up, although divided into smaller units than in some of the preceding months.

The Nordberg Mfg. Company, engine builders, Milwaukee, Wis., say that business during September was exceedingly good. They took no notable contracts, for the reason that they were "full" before the beginning of the month. So far as they can see there is no slacking of the demand, nor any prospect of slackening, but indications point rather to an increase.

The New Doty Mfg. Company, punches and shears, Janesville, Wis., were as busy in September as in any of the previous months, but think a slackening up in orders can now be seen.

Sibley & Ware, power drills, South Bend, Ind., enjoyed a good business in September, finding no lack of orders.

The M. C. Bullock Mfg. Company, mining machinery, Chicago, state that business continued good in September. They have just taken orders for two hoisting plants, also for mining machinery for Australia. The price of material continues to advance, which is the most likely check to business in the near future.

The Stover Mfg. Company, wind mills and feed mills, Freeport, Ill., say their business has continued unabated by influences that generally affect sales, such as higher prices, which is the hardest obstacle to encounter at this time. They apprehend a slowing up of sales, but when it is to come about they are not possessed of prophetical vision to say. Assurances are coming from reliable sources that certain lines of trade have been checked in consequence of extremely high prices, and it seems that they must soon affect other lines as well. They believe that the price of material is already too high and are not buying for the future to any extent, awaiting a more favorable time to place orders for stock. Not much advance has been made in prices of wind mills and feed mills to farmers, and this may account for the continued large demand. As a rule, farmers are prosperous and can afford to buy whatever they need.

J. H. Kerrick, general machinery, Minneapolis, Minn., noticed no let up in business during September. Several large contracts were placed for the building of saw mills, increasing of machine shop tools, and a general fitting up of plants that have been partially at work heretofore. Lumbermen are running their plants to their utmost capacity. Last week the Akeley Lumber Company of Minneapolis turned out 722,000 feet of lumber in a day, the largest cut that was ever made by one mill in the same time. Some large mills are being planned for erection the coming winter. The building trade was never so active as now. The demand for iron is so great it is out of the question for the mills to supply the trade at present, and consequently some parties, in order to carry out contracts that must be filled, are willing to pay a premium to get their orders filled promptly. The country was never in such a prosperous condition as it is at the present time, and no decrease in business is to be expected for at least one year, and not then unless the iron market becomes well supplied and orders begin to slacken.

The Gardner Governor Company, Quincy, Ill., report their business for September exceptionally good. This was particularly true of the pump department, in which they received more orders than for any previous month in the history of the business. The demand is further increasing instead of slackening. The most notable contract on hand is a carload of pumps, intended for shipment to Europe. They think the greatest menace to business is the prevailing high price of materials. It goes against human nature to be obliged to pay twice as much for an article as it could be bought for a year or so previous. It requires a great deal of explanation. Purchases will be limited to immediate wants only, everybody expecting a dropping of prices to come at no greatly distant day.

Perry Ransom, Oshkosh, Wis., found that the month of September brought more machinery orders than the month of August. Business prospects are bright for this winter. No reason can be seen for any let up in trade for some time to come unless it is the election of next year.

The Union Steam Pump Company, Battle Creek, Mich., say that each succeeding month this year, counting from November, 1898, has shown an increase over the previous years' business, increasing by steps about 50, 60, 70, 80, 90 and 100 per cent. The larger percentage refers more particularly to the last month's business. Trade seems to be increasing. Their greatest apprehension for the future is that raw material will handicap the manufacturer and make it impossible for him to continue to supply foreign countries in competition with their local manufacturers. They feel positive that unless some decrease takes place in the price of raw material manufacturers will suffer and the country will suffer in turn. The situation as it now stands is very much strained, and while the producer of raw material may make hay while the sun shines, he will lose very much more than he has gained when the business of the country makes the change that is indicated by the present situation.

Joseph T. Ryerson & Son, Chicago, find the demand for boiler makers', tank builders' and sheet metal workers' machinery satisfactory, although a great many manufacturers are holding back their purchases of new equipment owing to the high prices. The demand, however, to cover urgent needs is sufficient to keep up the general average. They feel that in the lines concerning which they have any knowledge a marked reduction in price would stimuuate the purchase of considerable equipment among all the boiler, tank and sheet metal working shops throughout the West.

The American Hoist & Derrick Company, St. Paul, Minn., say that September business has shown a considerable falling off as compared with August. It is their opinion that the extremely high prices of materials are to a considerable extent checking the demand. So far as their observation goes they find frequently that an investment is laid over for a later date when it may be done at a less cost. Even this feature of inordinately and unreasonably high material prices is not in their opinion going to prevent exceptionally good business for the next two years. Their own business is and has been in most excellent condition, and the prospects are of the very best.

The Industrial Works, cranes, Bay City, Mich., report that the volume of their business throughout the present year has been large and regular, orders averaging up well each month. They are still having the same line of inquiry, with prospects good for the future. Their plant has been running day and night continuously with no interruption in that direction. Prices upon many lines of materials have advanced rapidly, and in some lines the tendency might be to put off prospective improvements in consequence.

The Morton Mfg. Company, key way cutting machines, Muskegon Heights, Mich., say that the demand for machinery in their special lines continues in about the same volume as for the past year. Having orders for several months ahead they have not felt any slackening up of trade. In reply to a question as to what is most likely to check business in the near future they say it has been their observation for some years past that any political changes have more to do with the fluctuations in commercial and manufacturing circles than any other cause. A settled policy in our Government creates confidence and prosperity in commercial lines.

A. L. Ide & Sons, engines, Springfield, Ill., report trade very active during September. In fact, the demand for their products has been greater than they could fill. They do not apprehend any falling off in business in the near future, other than the normal ebb and flow of trade, due to the given seasons of the year.

The Whiting Foundry Equipment Company, Harvey, Ill., state that trade for September has been very lively, both with regard to inquiries coming in and orders received. There seems to be no let up in the demand, although in numerous instances people have postponed buying, owing to the high prices. The demand for the company's products is great by manufacturers, who have plenty of orders on their books and can afford to pay for new tools in order to increase their output. They are believers in "history repeats itself." From 1879 to 1893, about 14 years, the country had a period of good times, with the exception of now and then a setback, which was not all disastrous to the general market, and they are of the opinion that we are in that 14-year period now, and unless some unforeseen calamity arises they anticipate a good fair average business, although probably at maximum now.

The Manistee Iron Works Company, Manistee, Mich., say that work continues to come in, and they are running to nearly their full capacity without putting on a night force. Orders for steam pumps are constantly increasing, and they recently received an order for four large tubular boilers that are not wanted until next spring.

The S. Freeman & Sons Mfg. Company, engines and boilers, Racine, Wis., report that during the past month they booked a great deal of business, fully 25 per cent. more than for the same month last year. The demand seems greater than it has been. They notice a decided increase in new manufacturing establishments as well as an increase in capacity of older establishments. The boiler and engine manufacturer has a better oportunity for judging as to this than almost any other line. The continued advance in prices of materials must certainly sooner or later check the demand, but they do not look for any let up this year; possibly the present condition of affairs will last pretty well into the next year.

The H. W. Caldwell & Son Company, conveyor, elevating and power transmitting machinery, Chicago, say that trade during September was very satisfactory. They presume that there will be the usual slackening in business, due to the cold weather, with its effect on building operations, but do not see anything ahead to indicate a marked falling off in the near future.

The Armstrong Bros. Tool Company, Chicago, had a large demand for their lathe and planer tools during the month of September, sales showing an increase of about 25 per cent. over August, the largest percentage being from the railroad trade. They have not noticed any decided increase in new manufacturing establishments, but a great many old customers are adding to their plants. They expect to be taxed to their utmost capacity to fill orders the coming fall and winter.

The American Well Works, Aurora, Ill., have all of the business that they can handle, and in fact are turning away some. They see no reason to expect a decline before another fall, but believe that iron manufacturers have "boosted" prices too high, which will tend to check the consumption if anything will.

The Rodgers Iron Mfg. Company, Muskegon, Mich., are busy in every department, turning out saw mill machinery, railroad work and special machines. An engine 22 x 36 inches is under way for the Champion Iron & Steel Company. A set of machines after the A. T. Linderman patent is also being built for the New England Box Company of Boston.

Wickes Brothers, Saginaw, Mich., report their machinery trade for September about the same as for August. Inquiries are still plentiful, with an unusually high percentage of orders. Everybody is in a hurry, and very few demur at paying the high prices now ruling. They have sold the past month a 26 x 32 inch heavy duty engine, for shipment to Mississippi, a 26 x 54 and a 28 x 54 inch Corliss engine, for shipment to Pittsburgh, besides a large number of other orders of probably no special interest. They notice a very general movement among present plants in the way of increasing their facilities. Nearly every manufacturing concern in their section is making some movement that will enable them to increase the amount of their output. They have no reason to believe that there will be any serious check to business in the near future, though probably next year the Presidential election will have a somewhat disquieting effect.

Pawling & Harnischfeger, Milwaukee, Wis., say they have noticed no material slackening of the demand. Their September inquiries and sales, while not so large as some of the months past, are fully up to the average.

The Bucyrus Company, designers and builders of dredges, steam shovels, excavating machinery, &c., South Milwaukee, Wis., say that the demand for the machinery which they manufacture is increasing rather than diminishing. Regarding the influence most likely to retard business in the near future, they say that the tendency toward an unreasonable increase in the prices for raw material will, in their judgment, induce such large advance in the prices of manufactured products that consumers in many lines will be disposed to curtail their orders, rather than pay those prices. The inevitable result will be the narrowing of the market. In lines in which there is considerable competition it will be impossible for the manufacturers to put up their prices in anything like the same proportion as that in which the prices of raw material have already been augmented. They believe that this tendency will have its effect upon the market, and that as soon as the orders for raw material already placed have been filled there will be a marked decrease in the demand.

The Standard Pneumatic Tool Company, Chicago, received a great many orders during September for pneumatic tools, a marked increase over the preceding month, from all parts of the world, and the outlook is still more promising, as the coming of fall invariably gives a great impetus to business in this line. They see no reason why the volume of business transacted should show any decrease during the next quarter, and unless some unforeseen contingency arises it will undoubtedly break all records.

Smoke Prevention and Boiler Rating.

The proceedings of the Engineers' Society of Western Pennsylvania, just issued, contains the recommendations of the committee on smoke prevention appointed some months ago mainly to furnish a rule for the rating of boilers. The committee has gone quite carefully into the subject, collecting information and data from makers of boilers and automatic stokers, besides consulting with experienced engineers.

In the matter of rating of steam producing plants, the following three divisions were discussed: (1) Heating surface per horse power; (2) grate surface per horse power, and (3) amount of draft. The committee did not think it wise to recommend any fixed amount of heating surface per horse-power, partly because some boilers are working economically with less than the usual surface usually recommended per horse-power; that is, for a horizontal tubular 12 square feet, and for water tubular 10 square feet.

In regard to the area of grate surface per horse-power, the committee recommends the following: (1) Run of mine, 1-6 to 1-5 square foot per horse-power; (2) slack, bituminous anthracite, ¼ to 5 square feet per horse-power, the air space in the grate being taken at 50 per cent. For mechanical stoking the rate should be the same.

Regarding the third matter the committee finds that in all cases the draft should be measured not in the stack nor in the ash pit, but in the furnace over the fire and with the furnace door closed and the ash pit door open when working the grate at the above mentioned rate. When thus measured in unfavorable weather the minimum should be ⅜ inch for run of mine and ½ inch for slack.

Regarding smoke prevention the committee reached the following conclusions:

1. In an ordinary furnace smoke may be made very light by careful hand firing, yet in practice this cannot be obtained continuously, and the use of special furnaces or appliances should be insisted on and made compulsory by law.

2. The best method of preventing smoke is to burn the fuel in a separate chamber, so that the combustion is complete before the gases touch the surface of the boiler.

3. Where this method is not practical, as in boilers already set and where there is no room, the best results are obtained by mixing the smoke, as it passes from the furnace, with heated air, the effect of which increases the temperature of the smoke as the temperature of the air increases, thus burning the smoke.

4. That as, even with special furnaces of the above types, with hand firing, the combustion is irregular and hence some smoke must be produced at times, the use of mechanical stokers is strongly recommended, especially in all plants above 100 horse-power.

5. As mentioned above, there is a lower limit of grate area per horse-power, below which the furnace is not heated enough to insure complete combustion and smoke is thus produced. For this reason all plants should be subdivided into two units at least, in order that the boilers may never run at a lower activity than one-third of their rated horse-power.

New Records of Production.—The Illinois Steel Company's works have been making record breaking runs of late. Their rail mill at South Chicago rolled 1318 gross tons of rails in 12 hours on the 22d ult., making 136 tons in the last hour, while in the week ended on the 25th the Joliet works turned out 2099 tons of billets, 4050 tons of wire rods and 708 tons of merchant mill product.

HARDWARE.

Condition of Trade.

DURING the past week there has been perhaps a still further increase in the volume of general business, especially so far as retailers' orders are concerned, and jobbing houses and manufacturers in their direct dealings with the merchants are fully occupied. There is a snap and vigor about business which has not been experienced for a long time, and there is considerable difficulty in several lines in getting goods in sufficient quantities to meet the demands of trade. The Iron market continues strong and with an upward tendency, and manufacturers often find it difficult to obtain material as promptly as their needs require. In this condition of things unusual care is being exercised in accepting orders for future delivery. Advances are constantly being made in general goods in which the item of labor is an important element of cost, inasmuch as the higher prices of the raw material, together with the moderate advances which have taken place in wages render this action necessary. A reasonable disposition on the part of manufacturers to realize in the present state of things a better margin of profit than has been possible under the close competition of past years, in which it was for many of them a difficult matter to obtain a fair return for their investment and labors, has its effect in advancing prices. This has been done, however, in nearly all these general lines with conservatism, and the announcement of such higher prices is regarded by the trade with satisfaction, adding as these advances do to the profits of the jobbers, who are making unusually ample margins, and to the present value of the stocks on the shelves of the retailers. The question as to whether the high prices on some goods, especially in the line of Heavy Hardware, are as yet interfering seriously with the consumption, is one which is often canvassed. There is no doubt that many large enterprises in building have been abandoned for the time being on account of the high prices of Structural Iron and other materials, and doubtless in other directions the same influence is felt. As long as the demand keeps unabated and in excess of the supply, as it has recently been in many heavy lines, it is to be expected that high prices will be continued, but when there is a serious abatement of the demand the conditions will be vastly different. Many careful observers are apprehensive that the danger point in the raw material and goods which lie near it is not far distant, if it has not been already reached. Opinions, however, differ widely as to when the reaction will take place. Meanwhile it is obviously the dictate of wisdom for manufacturers, jobbers and retailers to avail themselves of the present opportunity. This suggestion is perhaps especially necessary for the retail trade, as many of them are probably selling at substantially the old prices goods which have materially advanced. There should be an earnest effort made to realize the profit afforded by the existing condition of things, looking forward to the time when the old stocks must be replaced at higher prices. The shrinkage in the value of goods which must come sooner or later must also be borne in mind, as it will then be necessary in taking stock to enter the goods at less than they cost. The wise merchant will endeavor so to conduct his business that adequate profits are made while the present favorable conditions continue, and have as small a stock as possible when the decline takes place.

Chicago.

(By Telegraph.)

Fall trade in Shelf Hardware is now running almost at full tide, and the volume of business would be greater if jobbers were able to get goods more promptly. A serious shortage is experienced, not only in many lines of seasonable goods, but also in merchandise of a staple character. Axes are notably scarce. The sharp cold snap of last week caused a heavy increase in the demand for winter goods. Such articles as Skates, for instance, have been in active request. The shortage of cars is causing a great deal of trouble in delaying shipments, not only to jobbers, but to retailers. An advance has been made in the entire line of Screws of about 14 per cent., or from 80 and 2½ to 80 per cent. off. Another advance, which particularly affects the jobbing interests, is a rise in the price of packing boxes. No charge being made for boxing and cartage this decreased jobbers' margins. It was expected that the Heavy Hardware jobbers might restore charges on boxing and cartage at their recent meeting in Denver, but no action was taken on this matter. The new president of the Heavy Hardware Association is John C. Koch of the John Pritzlaff Hardware Company, Milwaukee. W. C. Brown of Chicago was re-elected secretary and treasurer. Heavy Hardware was never so active as in September, and the demand continues fully as great as during that month. The Heavy Hardware jobbers are now quite generally shortening their terms to net cash 30 days on many lines of goods. Stocks are badly broken in most warehouses. Jobbers report that in some cases they are just getting deliveries on stock ordered from the mills six months since.

St. Louis.

(By Telegraph.)

The sale of winter goods has well set in, and retailers are active in making deliveries to consumers. Stove men have their hands full in setting up new goods ready for firing, and the demand for Stove repairs is decidedly brisk. The movement of Elbows and Stove Pipe has proved to be beyond calculations and manufacturing, which ordinarily slows up somewhat, must now be briskly pushed forward. Tinners have no complaints to make about the extent of outdoor repairs and renewals, and considerable indoor hot air work is now on order books. Local manufacturers of Household Tinware have all the orders they can attend to. They say plenty of dealers are ready to place orders at prices under the market. Assuming that readiness it certainly shows that more wants will have to come to market shortly. Lanterns were advanced on the 30th about one-eighth. Wood Screws were put up about the same amount, and new list

prices have been named on Machine Bolts and Coach and Lag Screws. Great scarcity is reported in the latter items, and makers are reported as working to their utmost limit. The big demand for Wire Nails continues, and is a surprise to the trade. Orders for Bale Ties are being freely placed by dealers in the agricultural districts, and the demand is an evidence that plenty of straw and hay will be ready for market this winter. Snaths and Cradles are among the few other items which sustained 10 per cent. advance. Galvanized Iron continues rather weak and in light call. Jobbers universally report a fine trade in Builders' Hardware, although local builders and Hardwaremen complain of the dullness prevailing in the building trades of this city. This week is given up to the annual fair, and in it also occurs the Veiled Prophet's visit, in all his gorgeousness and with hosts of attendants, to the city of St. Louis. An immense gathering of visitors is present, and jobbers are keeping busy in receiving their out of town trade.

Boston.

BIGELOW & DOWSE COMPANY.—Vacations, horse trots and cattle shows are over. The whole forces are now pushing might and main each to obtain their share of the present prosperity. There is a "snap and go" to business which is refreshing. Purchases are made readily and freely at ruling market prices. The old conservatism with its doubts and uncertainties has given way to a bright and hopeful look for the future. For some time past the trade have been sure of a steady and advancing market for the rest of the year 1899. Those who have carefully watched the signs are able to prophesy a higher range of prices for the first half of 1900, and only the uncertainties of a Presidential election leave them in doubt regarding the continuance of the range of higher prices until 1901. The same difficulties exist now in obtaining prompt shipments from the factories as in the past. A prominent Saw manufacturer writes that it will be impossible to accept orders for Cross Cut Saws for delivery before January. The Axe manufacturers have their products sold for the year. These are only instances among the many. That there is a short supply of manufactured goods at the factories compels the retailers to make unusual drafts on the jobbers, who are rapidly depleting their stocks. While the jobbers have fortified themselves with abnormally large stocks, they find them melting away under the unusual demand.

There seems to be a desire to maintain manufacturers' prices, and there is little complaint of cutting. But few goods are being offered for spring deliveries. Neither factories nor jobbers are inclined to take the risk, with the prospect of increasing values before them.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—The September trade has fairly met expectations in tonnage, probably somewhat more than in '98. When the weather was suitable for farm work, the farming sections were too busy to use or buy much Hardware. Other sources, however, of trade, such as mining and lumber, have helped to keep up the demand, and on the whole the trade has been satisfactory.

Thus far there has not been shown a lessened demand on account of advanced prices, and it is now assured that this feature will cut no figure this season. An occasional building operation that was under consideration may have been dropped for the time from this cause, but others have taken its place and the demand for goods has not slackened.

Nor is it probable that this feature of the situation will check largely the contemplated building operations for 1900. Certainly not if prices are not pushed much higher. Prices in substantially all lines of Shelf Hardware are not so high now as in the least to check competition, and when the market values of Pig Iron, Steel, Nails, Wire and Sheet Iron begin to recede, which now does not seem probable for a very considerable period ahead, even then most lines of Shelf Hardware will probably be very little affected. Such goods have generally been sold too low, many of them below actual cost, an undesirable condition of things, even to the consumers, in the long run. Present advances in prices on these goods have not been excessive, and they are pretty sure to hold long enough ahead to dismiss the subject from early consideration.

There is danger of prices yet being pushed so high in some lines—and especially in the goods that come nearest to the raw material—as to invite great overproduction and also a lessened demand. It is in the air to keep on advancing when once the tide sets that way, and it requires long heads and prudent counsels to call a halt before it is too late. It is to be hoped that the retail dealer is getting his share of the advances. Certainly he has had his opportunities. His purchases have been favorable, and between them and his stock on hand at the beginning of the advances he ought to have been able to realize handsome profits. To be sure he has been handicapped, as the jobber has also been, by the fellows—his neighbors—whose business policy is to give away advances and themselves to pocket the declines when they come, forgetting that it is a poor rule that does not work both ways. Still we repeat it, the retail dealer has had fine opportunities, and they are yet far from being all past. He should constantly have in mind the fact that, as he clears his shelves and buys fresh goods, they are likely to cost more than the last purchase.

There is an additional feature in the situation which is not to be lost sight of by the retail dealer as well as the wholesale dealer—the increased amount of capital required in the business in an advancing market. Every invoice calls for more money than was necessary before the advances began, and at the inventory at the end of the year many dealers will find that all profits have been absorbed in the increased values.

Indeed, this period of advances will be different from those of the past if many merchants do not find that their increased profits are offset by increased liabilities, and in some cases even additional capital may be necessary to continue the business.

To the careful observer it is evident that while there have been and probably are still excellent opportunities to increase profits, these may easily be lost and the dealer may find that he is the loser in the end.

Louisville.

W. B. BELKNAP & CO.—There is the same story to tell of continued strength in the market throughout all lines. The main demand seems to be for Plates, structural stock, Iron and Steel Bars. There is no question about actual scarcity and judging by delayed deliveries production does not seem to gain, as people supposed it would, by this time. We are shortly coming to the season, however, November and December, when the mills will be able to more nearly catch up with their dates.

The pressure brought by the present demand on all mining enterprises is making a special drain on goods of that character. It would seem as though the outcome of this must be to keep railroad lines well employed all winter long fetching ore from the Northwest, so the closing of navigation hereafter will not have the same significance that it used to have, as that channel once opened will not likely be closed. The difference, however, between the capacity of the large lake steamers, like the "John Smeaton" of West Superior, for instance, which brought out on its initial trip from the ore docks there some 10,000 tons, and that of rail transportation may be noted when one realizes that it would take a train load of 200 cars or eight good trains of 25 such cars of 50 tons capacity each, to equal this one vessel load. But there is the advantage when it reaches the Iron country of delivery to exact destination without rehandling on the docks at Cleveland or Buffalo, and this will partly compensate for the extra cost of carriage.

Stimulus like the present is sure to bring out great economic results.

Baltimore.

CARLIN & FULTON.—Business during the month just ended has compared favorably with that of a year ago, though we must bear in mind that where trade is not stimulated by unusual industrial activities high prices do not increase consumption.

As predicted by us in our letters for some time past, manufacturers whose quotations have been based upon low priced raw material are now rapidly announcing advanced prices, to conform with the changed conditions of the market; and buyers will do well to take prompt advantage of any opportunities to buy any line of goods at prices approaching old costs. The higher prices now ruling for cotton should greatly benefit those sections where the crop has not been materially diminished, but we regret to hear complaints from our Eastern grain growers as to the low prices for both wheat and corn, which affect the purchasing ability of the farmer dependent upon those staples.

If the manufacturers will only be conservative and not put their goods beyond the reach of the consumer on account of an extraordinary demand, we look for a fair, in fact a good, business for the balance of the year.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The wheels of commerce still continue to run smoothly and with a rapidity surpassing that of 1892-'93. Enterprise and activity go hand in hand, and without any doubt this year will be the greatest in a business way ever enjoyed by the people west of the Missouri River. A higher degree of prosperity than ever exists, and the prospects for the future reflect a continuance of these satisfactory conditions. Notwithstanding the heavy advances in prices no effect has been apparent to diminish the demand.

Many lines of seasonable goods are very scarce, and the demand being in excess of the supply the jobbing trade find it a most difficult task to supply the requirements of their customers with any degree of promptness. The conditions in the agricultural regions are all that could be desired. Crops of all kinds have been very abundant, and the market prices are fairly remunerative, while the stock raising communities are enjoying a veritable boom. As long as these conditions prevail there will be no diminution in trade and a very heavy fall and winter business is confidently expected.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—We note with pleasure *The Iron Age* comments on the market in issue of September 21. There cannot be too much stress laid on the fact of the abnormally high prices now prevailing in staple goods, as well as in many other lines pertaining to the Hardware business controlled by combinations and trusts. There is bound to be a day of reckoning for the jobber or retailer carrying heavy stocks in such a market. The profit accruing in advancing market of one year has always been more than offset by the declining market of the succeeding five years. No reasonable man will or could begrudge the manufacturers a fair advance on low prices prevailing prior to the first of this year, but where they have boosted prices 100 per cent. and upward, there can be but one ending—a loss to all. There is nothing in the condition of the consumer in 1899 to warrant such advances over 1898. Wheat, corn, cotton and other farm products have not advanced in price to justify such a market.

There is little or no change to report in trade conditions since our last. Advances regularly to hand and revised costs mailed or telegraphed salesmen. Demand for goods is still satisfactory for the season. Collections should from now on show an improvement.

New Orleans.

A. BALDWIN & CO.—There has been considerable improvement in the general situation during the past thirty days, and, notwithstanding some of the senseless quarantines, a large volume of goods is being moved, and there has been at least 30 per cent. of an increase during September over the previous year. The improvement in the cotton sections has produced a much greater demand for goods, and it looks as though some of the prosperity that our Northern and Western friends have been enjoying is about due through these Southern States. We anticipate a very heavy demand and increased business for the next 60 days.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues active in jobbing circles. It is a season of the year when we usually expect good fall trade, but in comparison with any year during the last few years it is safe to say it is far in excess of what we have heretofore had. There is no weakening in prices, but every indication of a continued upward tendency on many lines. Manufacturers of many lines of goods inform their trade that they contemplate further advances in the very near future. The retail trade as a rule are realizing the fact that goods will be no lower for many months to come, and the far distant future when the output of raw material is equal to the demand we can see no reason for anticipating at any immediate time. After a struggle of some months jobbers have succeeded in getting their stock in such condition that they are able to supply immediate calls from the retail merchant, but it has required months of hard work to secure these goods, some of which were ordered a long time since. There is one satisfaction to both the jobbers and the retail merchant, the country is prosperous and so far as we can learn it is not necessary for any man who desires work to be out of employment.

Collections continue fair.

Cleveland.

THE W. BINGHAM COMPANY.—September business was, like most of the months this year, the largest on record and the demand still goes on. Prices are steadily advancing, and on some lines have about reached the "danger mark." The demand for Builders' Hardware in this immediate section is particularly good. Collections are fair.

We were somewhat amused at reading the article in last week's issue of *The Iron Age* upon the condition of trade, wherein it was stated, "many manufacturers have had a severe lesson through the present year in regard to vague and indefinite orders," &c., and "that the matter of introducing some new form of contract which shall be equitable for both parties, and which shall especially furnish sellers with some reasonable protection, is receiving consideration."

We wondered why this had not occurred to the said manufacturers during the past six years, when prices were going the other way, or would it occur to them in the near future when prices have reached the top notch, and if then a new form of contract which should especially furnish the buyer with a reasonable protection, would be considered. We shall see.

San Francisco.

MILLER, SLOSS & SCOTT.—Trade on the Pacific Coast still continues to be good notwithstanding the rapid increase in prices. The demand does not seem to abate, but, on the contrary, seems to grow more and more. The output of California as regards grain and fruit is larger than last year, and prices are also in better condition.

The Pacific Coast has been favored with a visit from David Williams of *The Iron Age*, and he has been the guest of the Pacific Coast Hardware & Metal Association. A reception was given him at the Cosmos Club in San Francisco, where he could meet personally the different representatives of the Association.

Notes on Prices.

Wire Nails.— The trade have been looking for another advance in Wire Nails, but thus far it has not been announced and prices remain as at our last report. There

is a steady demand and the market is strong. Some difficulty is experienced in making shipments as promptly as goods are desired. Quotations are as follows, f.o.b., Pittsburgh, terms, 30 days net:

To jobbers in carload lots	$2.80
To " in less than carload lots	2.82½
To retailers in carload lots	2.95
To " in less than carload lots	3.05

New York.—There is no special change in the general features of the New York Wire Nail market. The character of orders indicates that a good amount of building is going on, though it is known that in some cases projected enterprises have been given up. Local quotations are as follows:

To retailers, carloads on dock	$3.10
To " less than carloads on dock	$3.15 to 3.25
Small lots from store	3.25 to 3.40

Chicago, by Telegraph.—Manufacturers report a continued strong demand. The American Steel & Wire Company started their works, at Anderson, Ind., on Monday, which is an indication of the pressure for shipments of Wire products. Prices are unchanged, single carload lots being still quoted on the basis of $3.10, Chicago, while small lots from stock are selling at $3.20.

St. Louis, by Telegraph.—It has been a source of surprise to the trade to find demand for Nails so heavy. The higher prices have not visibly affected consumption. Quotations continue $3.15, base, St. Louis, for single cars to retailers, and $3.25 for small lots from stock.

Pittsburgh.—The expected advance in the price of Wire Nails has not been made, but may come any day. We are advised there is a good movement in Wire Nails, though many of the trade who heretofore have bought carloads are making purchases in small lots, preferring not to carry large stocks. The tone of the market, however, is strong and higher prices seem likely. We quote: To jobbers in carload lots $2.80; to jobbers in less than carload lots, $2.82½; to retailers in carload lots, $2.95; to retailers in less than carload lots, $3.05, f.o.b. Pittsburgh; terms 30 days net, with freight to destination added.

Cut Nails.—An advance of 15 cents has been made in the price of Cut Nails in Eastern territory, making the base price $2.55. The market is steadily maintained. It is reported that the high price of Wire Nails is bringing the Cut Nails into increased demand. Merchants are not disposed to buy beyond their early requirements. Quotations in Eastern territory are as follows, f.o.b., Pittsburgh, freight being added to point of destination:

To jobbers in carload lots	$2.55
To " " in less than carload lots	2.60
To retailers in carload lots	2.65
To " in less than carload lots	2.80

New York.—There is a fair demand for Nails, but prices are not as regularly maintained as is frequently the case. Quotations for single carloads on dock are about $2.65 to $2.70. Small lots from store are held at $2.75 to $2.80.

Chicago, by Telegraph.—The demand continues good within usual limits of this branch of trade, with small lots from stock selling at $2.70.

St. Louis, by Telegraph.—Nearby mills are kept steadily at work with their usual output. Jobbers' sales keep up evenly at $2.75, base, out of stock.

Pittsburgh.—There is a good demand for Cut Nails, sufficient to keep the mills fully employed, and the market is strong. We quote Cut Nails at $2.45 to $2.50 in carloads, and $2.55 to $2.60 in less than carloads, f.ob. mill, usual terms.

Barb Wire.—No further change has thus far been announced in Barb Wire. The demand continues heavy and the market has a strong tone. Quotations are as follows, f.o.b. Pittsburgh, net cash, 30 days:

To jobbers in carload lots, Painted	$3.25
" " " Galvanized	3.40
" in less than carload lots, Painted	3.27½
" " " " " Galvanized	3.42½
To retailers in carload lots, Painted	3.40
" " " Galvanized	3.55
" in less than carload lots, Painted	3.50
" " " " " Galvanized	3.65

Chicago, by Telegraph.—Trade is reported exceedingly satisfactory by manufacturers. Another advance had been expected on Monday, but old prices were permitted to stand. Jobbers report a large movement from stock. Prices continue without change, as follows: Single carload lots of Plain Annealed Wire, $2.95; Painted Barb Wire, $3.55; Galvanized Barb Wire, $3.70. Jobbers name 10 cents per 100 pounds above manufacturers' rates for small lots.

St. Louis, by Telegraph.—Nothing of interest has transpired in the local trade. Business can be comfortably taken care of. Car lots of Painted to retailers are held at $3.60, smaller quantities being held at $3.70. Galvanized commands 15 cents advance.

Pittsburgh.—The market is very quiet. It is expected an advance in prices will be made before long. We quote $3.25 for Painted in carload lots to jobbers and $3.50 in less than carloads, with an advance of 15 cents for Galvanized, all f.o.b mills, terms net 30 days.

Smooth Wire.—Heavy purchases continue to be made of Smooth Wire at prices recently ruling. Quotations are as follows, f.o.b. Pittsburgh, terms 30 days net cash:

To jobbers in carload lots	$2.65
To " in less than carload lots	2.67½
To retailers in carload lots	2.80
To " in less than carload lots	2.90

Pittsburgh.—Considering the lateness of the season the demand for Smooth Wire can be reported as excellent, keeping the mills fairly employed and in some cases somewhat behind in orders. We quote: To jobbers in carload lots, $2.65; to jobbers in less than carload lots, $2.67½; to retailers in carload lots, $2.80; to retailers in less than carload lots, $2.90, all f.o.b. Pittsburgh, terms net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, $1.10.

Wire Brads.—The market for Miscellaneous Wire Nails, Brads, &c., is very firm, and prices are regularly maintained on the basis of discount 80 and 10 and 5 per cent. to the jobbing trade in ordinary lots, with an extra discount in carloads. The regular quotation to the retail trade is 80 and 5 per cent. This is a line of goods on which concessions are frequently made by the jobbers.

Steward & Romaine Mfg. Company.—An error was made in our last issue, doubtless recognized by many in the trade, by the reference to the withdrawal of prices by Steward & Romaine Mfg. Company, Philadelphia. Reference should have been made to their Expansion Bolts instead of Bits, as erroneously printed.

Peck, Stow & Wilcox Company.—We give herewith the last discount sheet of Peck, Stow & Wilcox Company, Southington, Conn., and 27 Murray street, New York, which bears date September 30, to which reference was made in our last issue. In connection with it we give the discounts on the same goods as given in their discount sheets Nos. 1 and 2, bearing date March 1, 1898, and May 1, 1899. An opportunity is thus afforded to compare the regular published prices at this time with those prevailing a few months ago, after a good many advances had taken place, and with those quoted in the spring of last year, when old prices were still prevailing. It will be seen by these comparative discounts that while nearly all goods have been advanced, there are some exceptions, and the extent of the advance is clearly indicated. It should be borne in mind that these are the regular printed discounts of the company, special discounts being made on most goods to larger buyers. Goods marked A are referred to by the company as subject to a discount of 10 per cent. beyond the discounts printed, while goods marked B are net. All others are subject to an additional discount of from 20 to 25 per cent.:

TINNERS' TOOLS AND MACHINES.

	Discount Sheet No 3, Sept, 30, 1899.	Discount Sheet No. 2, May 1, 1899.	Discount Sheet No. 1, March 1, 1898.
	Per cent.	Per cent.	Per cent.
Tin Folding Machines	B 5	A 5	A 5
Grooving Machines	B Net	A Net	A Net
Kennedy's Attachment	B Net	A Net	A Net
Ridgway's Grooving Roll	B Net	A Net	A Net
Columbian Machines	B 10	A 10	A 10
Elbow Edging Machine	B 10	A 10	A 10
Elbow Edging Rolls	B 10	A 10	A 10
Encased Machines	B Net	A Net	A Net
Improved Standards	B Net	A Net	A Net
Raymond's Machines	B Net	A Net	A Net
Raymond's Standards	B Net	A Net	A Net
No 1 Machines	B Net	A Net	A Net
No. 1 Standards	B Net	A Net	A Net
Stove Pipe Crimper and Beader	B 16⅔	A 16⅔	A 16⅔
Stow's Rim Machine	B Net	A Net	A Net
Tucking Machine	B 5	A 5	A 5
Power Wiring and Turning Machines	B 5	A 5	A 5
Crimping Machines	B 5	A 5	A 5
Beading Machines	B 5	A 5	A 5
Moore's Double Seamers	B 5	A 5	A 5
Stow's Double Seamers	B 5	A 5	A 5
Olmsted's Double Seamers	B 20 & 7½	A 20 & 7½	A 20 & 7½
Hulbert's Double Seamers	B 20 & 7½	A 20 & 7½	A 20 & 7½
Burton's Double Seamer	B 5	A 5	A 5
Wire Straighteners	B 5	A 5	A 5
Straightener, Feed and Cutter	B 5	A 5	A 5
Wire Feed and Cutter	B 5	A 5	A 5
Wire Reels	B Net	A Net	A Net
Stove and Tin Pipe Formers	B 20 & 7½	A 20 & 7½	A 20 & 7½
Forming Machines	B 5	A 5	A 5
Corrugating Machines	B 16⅔	A 16⅔	A 16⅔
Square and Angular Box Machines	B 5	A 5	A 5
Stow's Patent Tube Formers	B Net	A Net	A Net
Spalding's Patent Tube Formers	B 5	A 5	A 5
Forming and Folding Machines	B Net	A Net	A Net
Boiler Expander	B 16⅔	A 16⅔	A 16⅔
Sheet Iron Folding Machines	B 5	A 5	A 5
Gutter Machines and Gutter Rods	B 20	A 20	A 20
Stow's Power Squaring Shears	B 5	A 5	A 5
Squaring Shears	B 20	A 20	A 20
Cornice Makers' Squaring Shears	B Net	B Net	B Net
Slitting and Squaring Shears	B 16⅔	A 16⅔	A 16⅔
Bench and Slitting Shears	B 20 & 7½	A 20 & 7½	A 20 & 7½
Rotary Slitting Shears	B 16⅔	A 16⅔	A 16⅔
Parallel and Beveling Shears	B 5	A 5	A 5
Savage's Rotary Shears	B 16⅔	A 16⅔	A 16⅔
Newton's Circular Shears	B 10	A 10	A 10
Flander's Circular Shears	B 16⅔	A 16⅔	A 16⅔
Waugh's Circular Shears, Nos. 1, 2	B 25	A 25	A 25
Waugh's Shears, Nos. 3, 4, 5	B 5	A 5	A 5
Ring and Circle Shear	B 16⅔	A 16⅔	A 16⅔
Samson Punch	B 16⅔	A 16⅔	A 16⅔
Combined Shear and Punch	B 16⅔	A 16⅔	A 16⅔
Lever Shears	B 16⅔	A 16⅔	A 16⅔
Notching Machine	B 16⅔	A 16⅔	A 16⅔
Rolling Cutter Shears	B 16⅔	A 16⅔	.....
Bench Shears	B 20	A 20	A 20
Tinners' Snips	B 25	A 25	A 25
German Pattern Snips	B 25	A 25	A 25
Roofers' Shears	B 33⅓	A 33⅓	A 33⅓ & 5
Tinners' Snips, "Berlin"	B 40	A 40	A 40 & 5
Circular Snips, "P. S. & W."	B 25	A 25	A 25
Hawk's Bill Shears	B 30	A 30	A 30
Shears and Snips	B 25	A 25	A 25
Cotton Bale Snips	B 20	A 20	A 20
The Lyon Shear	B 10	A 10	A 10
Snip and Pipe Crimper	B 16⅔	A 16⅔	A 16⅔
Cutting Nippers	B 40	A 40	A 40
Stow's Shear Holder	B 20	A 20	A 20
Stow's Stake Holder and Stakes	B 10	A 10	A 10
Set of Tinners' Tools	B 20	A 20	A 20
Tinners' Stakes	B 20	A 20	A 20
Swedges	B 20	A 20	A 20
Square Pan Machines	B 16⅔	A 16⅔	A 16⅔
Bench Plates	B 20	A 20	A 20
Planishing Hammers	B 20 & 7½	A 20 & 7½	A 20 & 7½
Riveting and Setting Hammers	B 33⅓ & 5	A 33⅓ & 5	A 33⅓ & 5
Raising Hammers	B 20 & 7½	A 20 & 7½	A 20 & 7½
Hollow Punches	B 33⅓ & 5	A 33⅓ & 5	A 33⅓ & 5
Solid and Prick Punches	B 50 & 10	A 50 & 10	A 50 & 10
Tinners' Blued Rivet Sets	B 50 & 10	A 50 & 10	A 50 & 10
Cast Steel Rivet Sets, Jap'd.	B 70	A 70	A 70
Grooving Tools	B 33⅓ & 5	A 33⅓ & 5	A 33⅓ & 5
Lantern and Wire Chisels	B 50 & 10	A 50 & 10	A 50 & 10
Tinners' Scratch Awls	B 20	A 20	A 20
Reese's Roofing Tongs	B Net	A Net	A Net
Roofing Tools and Tongs	B 20	A 20	A 20
Heberling's Double Seamers	B 16⅔	A 16⅔	A 16⅔
Burritt's Double Seamers	B 20 & 7½	A 20 & 7½	A 20 & 7½
Burritt's Cross Lock Seamers	B Net	A Net	A Net
Cornice Brakes	B Net	B Net	B Net
Presses	B 5	A 5	A 5
Machine Parts	B Net	A Net	A Net

HARDWARE.

Wire Gauges	Net	Net	10
Tinners' Vises	A Net	A 10	A 10
Tinners' Rules	16⅔	25	25
Gas Furnace and Fire Pots	10	10	16⅔
Soldering Coppers	B 20	B 20	33⅓
Soldering Sets and Soldering Pans	25	25	25
Copper Handles and Mallets	25	25	25
Melting Ladles	25	25	25
Ears, Clips and Handles	25	25	33⅓
Kettle and Tea Kettle Ears	40	40	40 & 10
Malleable Kettle Ears	16⅔	20	25
Steel and Iron Squares	B 70	A 75	A 75
Bicycle Wrenches	16⅔	16⅔	25
The Solid Handle Wrench	B 50	A 50	A 50
Robinson's Wrenches, Bright and Black	B 50 & 10	A 50 & 10	A 60
Robinson's Wrenches, Blued	B 50	A 50	A 50 & 10
Machinists' Wrenches	B 66⅔	B 66⅔	A 70 & 5
Agricultural Wrenches	B 75	B 75	B 80
Adze Eye Nail Hammers	16⅔	25	33⅓
Farriers' Hammers	16⅔	25	33⅓
Riveting Hammers	20	25 & 5	33⅓ & 5
Machinists' Hammers	40	40 & 5	40 & 10
Blacksmiths' Hammers	25	25 & 5	33⅓ & 5
Iron Nail Hammers	10	10 & 5	16⅔
Steak Hammers	16⅔	16⅔	16⅔
Household Favorites	16⅔	16⅔	16⅔
Carpet Hammers	10	16⅔	16⅔
Shoe Hammers	20	25	33⅓
Forged Steel Hatchets	25	33⅓	40
Cast Shingling Hatchets	16⅔	20	25
Boy's Axes and Hunters' Hatchets	Net	16⅔	25
Bush Hooks	10	16⅔	16⅔ & 5
Corn Hooks	10	16⅔	16⅔
Butche s' Cleavers	16⅔	25	33⅓
Box and Plumbers' Scrapers	10	16⅔	16⅔ & 5
Socket Firmer and Framing Chisels	B 70 & 10	B 70 & 12½	A 75 & 5
Chisels and Slicks	B 70 & 10	B 70 & 12½	A 75 & 5
Chisels and Gouges	B 25	B 25	A 25
Tanged Chisels and Gouges	B 40 & 7½	B 40 & 7½	A 40 & 7½
Socket Firmer Gouges	B 33⅓ & 7½	B 33⅓ & 7½	A 33⅓ & 7½
Socket Firmer Paring Gouges	B 25	B 25	A 25
Sets of Chisels in Boxes	B 33⅓	B 33⅓	A 40 & 7½
Carp. and R. B. Drawing Knives	B 70 & 10	B 70 & 12½	A 75 & 5
Coach and Wagon Makers' Drawing Knives	B 70	B 70 & 10	A 70 & 10
Shingle Shaves	B 70	B 70 & 10	A 70 & 10
Cast Steel Auger Bits	A 70	A 75	A 75 & 10
Jennings' Pattern Auger Bits	A 66⅔	A 66⅔	A 66⅔
Cast Steel Car Bits	A 66⅔	A 66⅔	A 66⅔
Handled Auger Bits	No goods.	A 70	A 70
Taylor's Auger and Car Bits	A 60	A 60	A 66⅔
Bits and Braces in Fancy Boxes	10	16⅔	16⅔
Bit Braces	40	40 & 10	50
Geared Breast Drills	10	10	16⅔
Ratchet Drill Stocks	25	33⅓	33⅓
Compound Lever Cutting Nippers	Net.	10	10
Side Cutting Pliers	16⅔	25	33⅓
Diagonal Cutting Pliers	Net.	10	16⅔
Pliers, Nos. 20 and 25	16⅔	25	33⅓
Pliers, Nos. 240 and 250	50	50 & 10	50 & 10
Pliers, Nos 33 and 43	25	25	25
Splicing Clamp	10	10	25
Button's Pliers	60	60	60 & 5
Gas and Burner Pliers	50	60	60 & 5
Insulated Burner Pliers	33⅓	33⅓	33⅓
Carpenters' Pincers	33⅓	40	40
Wing Dividers	50 & 10	60	60 & 10
Compasses	50	50 & 10	50 & 10
Calipers, Nos. 101, 103 and 105	50	50 & 5	50 & 5
Calipers, Nos. 203 and 205	60	60	60 & 10
Calipers, Nos. 110, 115, 100 and 200	50	50 & 5	50 & 5
Calipers, No. 210	50 & 10	60	60 & 10
Saddlers' Punches	50	50 & 10	60
Agate Nail Sets	10	10	16⅔
Screw Drivers	50 & 10	60	66⅔
Forged Steel Cold Chisels	50	60	66⅔
Box Chisels	33⅓	33⅓	33⅓
Pruning Shears	10	10	10
Yankee Rose Cutter	Net.	Net.	Net
Garden Forks	25	10	10
Garden Trowels	10	10	10
Pincers and Cutting Nippers	16⅔	16⅔	20
Bolt or Rivet Clippers	16⅔	16⅔	16⅔
Blacksmiths' Butterises	25	25	25

	Sept. 30, 1899.	May 1, 1899.	March 1, 1898.
	Per cent.	Per cent.	Per cent.
Blacksmiths' Drills	5	5	16⅔
Cabinet Clamps	20	20	25
Carriage Makers' Clamps	25	33⅓	33⅓
Carpenters' Door Clamps	20	20	20
Plumb Bobs	Net.	Net.	16⅔
Bench Screws	12½	16⅔	33⅓
Jack Screws	25	33⅓	40
Saw Sets	16⅔	16⅔	25
Scratch Awls	20	20	25
Saw Rods	20	25	33⅓
Clapb'd Gauges and Shing. Brackets	25	25	25
Handles	60	70	75
Vises	10	10	16⅔
Scales	5	10	16⅔
Balances	Net.	Net.	10
Scale Beams and Poises	10	10	25
Steelyards	Net.	Net.	16⅔
Steel Traps	60	60	66⅔
Surprise Food Cutter	A 25	A 25	A 25
New Triumph Meat Choppers	A 25	A 25	A 25
Little Giant Meat Choppers	A 25	A 25	A 25
Woodruff's Meat Cutters	A 33⅓	A 33⅓	A 33⅓
Hale's Meat Cutters	A 60 & 5	A 60 & 5	A 60 & 5
Dixon's Meat Cutters	A 33⅓	A 33⅓	A 33⅓
Sausage Fillers	25	25	33⅓
Tobacco Cutters	16⅔	16⅔	16⅔
Ox Bow Pins	25	25	33⅓
Cattle Leaders	25	25	33⅓
Bull Rings	16⅔	20	33⅓ & 5
Ox Balls	25	25	33⅓ & 5
Cheese and Butter Triers	16⅔	16⅔	16⅔
Hog Scrapers	33⅓	33⅓	33⅓
Casters, except Brass Wheel	50	50 & 10	50 & 10 & 10
Brass Wheel Casters	33⅓	40	50 & 10
Piano Casters	33⅓	40	50 & 10
Truck or Box Casters	40	40 & 10	50
Iron Knob Tower Bolts	25	33⅓	50
Brass Knob Barrel Bolts	33⅓	40	50
Wrought Iron Barrel Bolts	60	66⅔	70 & 10
Cast Barrel Bolts	20	25	33⅓ & 5
Cast Brass Barrel Bolts	20		33⅓ & 5
Cast Brass Square Necked Bolts	20	25	40
Wrought Iron Necked Bolts	60	66⅔	70 & 10
Square Necked Bolts, No. 504	20	25	40
Wrought Iron Square Bolts	50	60	70
Wrought Spring Bolts, Nos. 415 and 417	60	66⅔	70 & 10
Steel Spring Square Bolts, No. 503	25	33⅓	40
Steel Spring Square Bolts, Nos 640 and 642	20	25	33⅓ & 5
Steel Spring Square Bolts	16⅔	33⅓	40
Cast Brass Square Spring Bolts	16⅔	16⅔	40
Mortise, Lever and Shutter Bolts	20	25	40
Flush Bolts	30	33⅓	33⅓
Cast Brass Flush Bolts	16⅔	16⅔	40 & 10
Chain Door Fasteners	10	10	10
Chain Door Fasteners	Net	16⅔	33⅓
Chain and Bottom Bolts	20	25	33⅓
Spring Foot Bolts	25	25 & 5	33⅓ & 5
Cupboard and Ship Bolts	25	25	40
Brass Showcase Catches	25	25	40
Brass Cupboard Catches	16⅔	16⅔	33⅓
Rural Cupboard Catches	33⅓	33⅓	33⅓
Cupboard Catches	25	25	33⅓ & 5
Brass Cupboard Catches	16⅔	16⅔	33⅓ & 5
Bronzed Cupboard Catches	25	33⅓	33⅓ & 5
French Window Catches	25	25	40
Cupboard Turns	33⅓	40	40 & 10
Screen Door Catches	16⅔	16⅔	40 & 10
Transom Catches	25 & 5	25 & 5	33⅓
Door Buttons	33⅓	33⅓	33⅓
Door Buttons	Net	25	33⅓
Door Buttons, No. 25	Net	Net	33⅓
Door Buttons, Nos. 30 and 35	33⅓	33⅓	40 & 10
Sash Fasteners	25	25	33⅓
Sash Fasteners	16⅔	16⅔	33⅓
Shutter Bars	25	25	33⅓
Shutter Bars, Nos. 50 and 55	Net	25	33⅓
Sash Lifts	33⅓	33⅓	33⅓
Sash Lifts, and Sash Lift and Lock	16⅔	16⅔	33⅓
Sash Pulls and Plates	16⅔	16⅔	33⅓
Shutter Lifts	16⅔	16⅔	33⅓
Shutter Knobs	25	25	33⅓
Stubs and Plates, and Shutter Screws	25	25	33⅓
Sash Cord Irons	25	25	33⅓
Sash Centers	33⅓	33⅓	40
Window Spring Bolts and Sockets	Net	Net	16⅔
Sash Props	40	40	40
Trunk and Sash Rollers	16⅔	16⅔	33⅓
Hay Fork and Frame Pulleys	16⅔	16⅔	25
Dumb Waiter Pulleys	16⅔	16⅔	25
Brass Screw Pulleys, No. 175	16⅔	20	25
Screw Pulleys, Japanned	16⅔	20	33⅓
Encased Pulleys	16⅔	16⅔	25 & 5
Awning and Side Pulleys	25	25	33⅓ & 5
Awning Pulleys	16⅔	20	25 & 5
Hot House Pulleys	10	16⅔	25
Clothes Line Pulleys	16⅔	16⅔	25

	Sept. 30, 1899.	May 1, 1899.	March 1, 1898.
	Per cent.	Per cent.	Per cent.
Incased Swivel and Upright Pulleys	16⅔	16⅔	25
Well Wheels	25	25 & 5	33⅓
Drawer Pulls	16⅔	16⅔	25
Toilet and Card Racks and Card Frames	40	40	40
Brass Lifting Handles	50	50	50
Lifting Handles	33⅓	40	40
Chest Handles	40	40	40 & 10
Chest Handles	50	50	50
Thread Escutcheons	20	20	25
Shutter Handles and Hitching Rings	16⅔	25	33⅓ & 5
Brass Flush Rings	16⅔	16⅔	33⅓
Flush Trap Door Rings	25	25 & 5	33⅓ & 5
Letter Box Plates	50	50	60
Door Handles	Net	Net	25
Door Handles and Latches	10	10	25
Door Handles and Latches	Net	Net	16⅔ & 5
Gravity Door Catch	10	10	16⅔ & 5
St. Louis Gate Latches	25	25	33⅓
Barn Door Latches and Bolts	Net	Net	25
Barn Door Hangers, Rollers and Stays	33⅓	33⅓	40
Sliding Shutter Sheaves	16⅔	16⅔	25
Sliding Door Sheaves	33⅓	40	50
Barn and Sliding Door Rail	25	25	33⅓
Door Pulls	16⅔	16⅔	20
Hat and Coat Hooks	Net	Net	20
Wardrobe Hooks	10	10	20
School House Hooks	5	10	25
Clothes Line Hooks	10	16⅔	25
Harness Hooks	10	16⅔	25
Chandelier and Ceiling Hooks	10	10	25
Lamp and Cabin Door Hooks	25	20	33⅓
Cup and Molding Hooks	25	25	40
Hammock Hooks	25	33⅓	33⅓
Bird Cage Hooks	25	25	33⅓
Boot Jacks	33⅓	33⅓	33⅓
Foot Scrapers	25	25	25 & 5
Kitchen Grindstones	16⅔	16⅔	25 & 5
Grindstone Fixtures	20	25	33⅓
Forest City Grindstone Fixtures	16⅔	16⅔	16⅔ & 5
Plate and Hook Hinges	16⅔	16⅔	33⅓
Loose Pin Butts	B 70	B 75	A 75
Bronzed Loose Pin Butts, No. 505	A 85	A 85 & 15	A 85 & 25
Bronzed L. P. Butts, Nos. 507, 508	A 85	A 85 & 15	A 85 & 33⅓
Inside Shut. Hinges and Par Butts	A 50	A 50	A 50
Shelf Brackets	33⅓	33⅓	40
Shelf Brackets, Nos 6 and 15	40 & 10	50	50 & 10
Shelf Brackets, Nos. 16, 25, 26	40	40	50
Shelf Brackets	40	40	50
Flower Pot and Lamp Brackets	25	33⅓	33⅓
Centric Bells and Push Buttons	16⅔	16⅔	16⅔
Bells and Bell Levers	20	20	33⅓
House Bells on Carriage	10	10	16⅔
Trip Gong and Alarm Bells	10	10	16⅔
Cranks, Pulls, Spikes and Springs	10	10	16⅔
Call Bells	33⅓	33⅓	40
Twine Boxes	33⅓	33⅓	33⅓ & 5
Paper Files and Clips	33⅓	33⅓	40
Match Safes	33⅓	33⅓	40
Carpet Stretchers and Tack Claws	16⅔	16⅔	25
Nut Crackers	25	25	25
Ice Picks, and Ice Axe and Pick	25	25	25
Towel Rollers and Cotton Hooks	25	25	25
Paste Jaggers and Cherry Seeders	16⅔	16⅔	25
Coffee and Spice Mills	B 60 & 5	B 60 & 5	A 60 & 5
Popular Coffee Mill	B 40 & 7½	B 40 & 7½	A 40 & 7½
Brass Andirons and Fender	33⅓	33⅓	50
Iron Fire Dogs	50	50	50 & 5
Blower Stands	50	50	50
Shovel and Tong Stands and Fire Sets	40	40	50
Kitchen Sets	50	50	55 & 5
Jamb Hooks	Net	Net	Net
Stinde's Fire Tongs	40	40	50
Coal Tongs	10	10	16⅔
Shovels, Tongs and Pokers	40	40	50 & 5
Coal Shovels	16⅔	16⅔	16⅔
Iron Stove Pokers	40	40	50
Brass Head Pokers	25	25	50
Stove Cover Lifters	16⅔	16⅔	16⅔
Coffee Pot and Sad Iron Stands	25	25	25 & 5
Candlesticks	25	25	25
Flue Stoppers	33⅓	33⅓	40
Coffee Roasters	Net	Net	Net
Stove Pipe Dampers and Centers	40	40	50
Common Carriage Bolts	B 50	B 66⅔	A 75
Common Tire Bolts	B 60	B 66⅔	A 75
Eagle Carriage Bolts	B 75 & 10	B 80	A 80 & 10
Philadelphia Pattern Carriage Bolts	B 65 & 10	B 75 & 5	A 75 & 10
Stove Bolts (new list)	B 62½	B 66⅔	A 75
Carriage Knobs	25	25	40

Screws.— Under date September 28 a further advance was made by the manufacturers of Wood Screws, their base discounts at present being as follows:

	Discount. Per cent.
Flat Head Iron	80
Round and Oval Head Iron	75
Round and Oval Head Piano, Unpolished	75
Fillister Head Iron	75
Flat Head Brass	77½
Round and Oval Head Brass	72½
Flat Head Bronze Metal	72½
Round and Oval Head Bronze Metal	70

The demand for Screws is reported to be exceptionally heavy.

Tacks.— The Tack market continues to have a strong tone and an upward tendency on account of the price of the raw material and the extent to which manufacturers are working in harmony. A good many jobbers, however, still have stocks purchased at much lower prices than those now current, and are in a position to shade the market. A good deal of confusion also is made in the trade at large, as a result of the extent to which Tacks of irregular weights are offered, many Star weights and Standard weights being sold. It should be borne in mind that Star weights are quoted by the manufacturers at 5 per cent. discount beyond Straight weights, and Standard weights at a discount of 10 and 5 per cent. beyond Straight weights. It is obviously the part of wisdom for the trade to be sure that they are getting the weights they desire and pay for.

Machine Bolts.— The accompanying new list on Machine Bolts has been adopted by the manufacturers, and went into effect October 1. It will be observed that it is a revision of the former list, changes being made really necessary on account of the increased cost of the raw material. No change has been made in discounts, the regular printed price continuing discount 50 and 10 per cent. The revised list is as follows:

Length in inches.	¼	5/16	⅜	7/16	½	9/16 and ⅝	¾	⅞	1	1⅛	1¼
1½	$1.70	$2.00	$2.40	$2.80	$3.60	$5.20	$7.20	$10.50	$15.10	$22.50	$30.00
2	1.78	2.12	2.56	3.00	3.86	5.58	7.70	11.20	16.00	23.70	31.50
2½	1.86	2.24	2.72	3.20	4.12	5.96	8.20	11.90	16.90	24.90	33.00
3	1.94	2.36	2.88	3.40	4.38	6.34	8.70	12.60	17.80	26.10	34.50
3½	2.02	2.48	3.04	3.60	4.64	6.72	9.20	13.30	18.70	27.30	36.00
4	2.10	2.60	3.20	3.80	4.90	7.10	9.70	14.00	19.60	28.50	37.50
4½	2.18	2.72	3.36	4.00	5.16	7.48	10.20	14.70	20.50	29.70	39.00
5	2.26	2.84	3.52	4.20	5.42	7.86	10.70	15.40	21.40	30.90	40.50
5½	2.34	2.96	3.68	4.40	5.68	8.24	11.20	16.10	22.30	32.10	42.00
6	2.42	3.08	3.84	4.60	5.94	8.62	11.70	16.80	23.20	33.30	43.50
6½	2.50	3.20	4.00	4.80	6.20	9.00	12.20	17.50	24.10	34.50	45 00
7	2.58	3.32	4.16	5.00	6.46	9.38	12.70	18.20	25.00	35.70	46.50
7½	2.66	3.44	4.32	5.20	6.72	9.76	13.20	18.90	25.90	36.90	48.00
8	2.74	3.56	4.48	5.40	6.98	10.14	13.70	19.60	26.80	38.10	49.50
9	2.90	3.80	4.80	5.80	7.50	10.90	14.70	21.00	28.60	40.50	52.50
10	3.06	4.04	5.12	6.20	8.02	11.66	15.70	22.40	30.40	42.90	55.50
11	3.22	4 28	5.44	6.60	8.54	12.42	16 70	23.80	32.20	45.30	58.50
12	3.38	4.52	5.76	7.00	9.06	13.18	17.70	25.20	34.00	47.70	61.50
13	....	....	6.08	7.40	9.58	13.94	18.70	26.60	35.80	50.10	64.50
14	....	....	6.40	7.80	10.10	14.70	19.70	28.00	37.60	52.50	67.50
15	....	....	6.72	8.20	10.62	15.46	20.70	29.40	39.40	54.90	70.50
16	....		7.04	8.60	11.14	16.22	21.70	30.80	41.20	57.30	73.50
17	....	....	...	....	11.66	16.98	22.70	32.20	43.00	59.70	76.50
18	....	....	....	....	12.18	17.74	23.70	33.60	44.80	62.10	79.50
19	..	....	....	....	12.70	18.50	24.70	35.00	46.60	64.50	82.50
20	....	....	....	....	13.22	19.26	25.70	36.40	48.40	66.90	85.50
21	....	....	...		.....	.....	26.70	37.80	50.20	69.30	88.50
22	....	....	....	....	.....	.....	27.70	39.20	52.00	71.70	91.50
23	....	....	....	....	.....	.....	28.70	40.60	53.80	74.10	94.50
24	....	....	....	....	.....	.....	29.70	42.00	55.60	76.50	97.50
25	....	....	....	....	.....	.....	30 70	43.40	57.40	78.90	100.50
26		....	....	....	...	.....	31.70	44 80	59.20	81.30	103.50
27	...	....	....	....	.....	.....	32.70	46.20	61.00	83.70	106 50
28	....	....	....	..	.....	...	33.70	47.60	62.80	86.10	109.50
29	..	....	....	....	.....	.....	34.70	49.00	64.60	88.50	112.50
30	....	....	....	....	.....	.....	35.70	50.40	66.40	90.90	115.50

The following extras are to be understood as a part of the Machine Bolt list: Bolts, with Hexagon Heads or Hexagon Nuts, 10 per cent. extra; if both Hexagon Heads and Hexagon Nuts, 20 per cent. extra; Joint Bolts with Oblong Nuts, Bolts with Tee Heads, Askew Heads and Eccentric Heads, 10 per cent extra.

Tubular Lanterns.— Changes have been made by the associated manufacturers of Tubular Lanterns in the list prices of some of the leading goods, which are referred to below. It will be observed that these changes are in the way of advance, and range from $1 per dozen on some of the cheapest goods to $3.50 on some of the more expensive. No change is made in the terms or discounts, which are as before represented by discount 40 to 40 and 10 per cent. to the retail trade, with further discount and rebate to the jobbers:

No.			Per doz
0	Tubular Lanterns,	Regular	$9.00
0	"	Hinge or Lift	9.50
0	"	Anti-Friction and Best Square Lift	10.50
0	"	Best Round Lift and Iron Clad	12.50
0	"	Warren, Galvanized Fount	10.50
0	"	Glass Fount	13 00
2	"		13.00
2	"	Cold Blast	16.00
0	Dash Board Lanterns,	Plain Tin, Plain Globe	12.50
0	" "	" Bull's Eye Globe	13.00
0	" "	Japanned, Plain Globe	13.00
0	" "	" Bull's Eye Globe	13.50
2	" "	Plain Tin, Plain Globe	16.50
2	" "	" Bull's Eye Globe	17.00
2	" "	Japanned, Plain Globe	17.00
2	" "	" Bull's Eye Globe	17.50

Coach and Lag Screws.— A revision has been made of the list on Coach and Lag Screws, the new list going into effect October 1. The discount remains as before, 65 and 10 per cent. on the Common Point and 65 and 5 per cent. on the Gimlet Point. The revised list is as follows:

Length in inches.	¼	⅜	7/16	½	9/16 & ⅝	¾	⅞	1
1 1-2	$2.25	$2.70	$3.15	$3.75	.....	.....	.....	.....
2	2.45	2.96	3.47	4.11	$5.00	.....	.....	.....
2 1-2	2.65	3.22	3.79	4.47	5.50	$7.90	.....	.....
3	2.85	3.48	4.11	4.83	6.00	8.60	$12.50	.....
3 1-2	3.05	3.74	4.43	5.19	6.50	9.30	13.50	$18.20
4	3.25	4.00	4.75	5.55	7.00	10.00	14 50	19.50
4 1-2	3.45	4.26	5.07	5.91	7.50	10.70	15.50	20.80
5	3.65	4.52	5.39	6.27	8.00	11.40	16.50	22.10
5 1-2	3.85	4.78	5.71	6.63	8.50	12.10	17.50	23.40
6	4.05	5.04	6.03	6.99	9.00	12.80	18.50	24.70
6 1-2	.....	.....	6.35	7.35	9.50	13 50	19 50	26.00
7	.....	.....	6.67	7.71	10 00	14.20	20 50	27.30
7 1-2	.....	.....	6.99	8.07	10.50	14 90	21.50	28.60
8	.....	.....	7.31	8.43	11.00	15.60	22.50	29.90
9	.....	.....	7.95	9.15	12.00	17.00	24.50	32.50
10	.....	.....	.....	9.87	13.00	18 40	26.50	35.10
11	.....	.....	.....	10.59	14.00	19 80	28.50	37.70
12	.....	.....	.....	11.31	15.00	21.20	30.50	40.30

The following extras are to be understood as a part of the Coach and Lag Screw list: Hexagon Heads, 10 per cent. extra; Ore Washer Screws, 20 per cent. extra; Skein Screws are sold at the same price as Lag Screws.

Paints and Colors.— *Leads.*—The demand for White Lead in Oil for prompt and October delivery is up to the usual fall business, if not somewhat in excess of last season's distribution. Former quotations are firmly maintained as follows: In lots of less than 500 pounds, 6½ cents; in lots of 500 pounds and over, 6 cents.

Glass.— The formation of the new American Window Glass Company is still of absorbing interest in Glass circles. It is reported that the preferred stock was oversubscribed, also that the Glass workers are endeavoring to put obstacles in the way of the formation of the trust. The opposition has resulted in securing a temporary injunction restraining a Pennsylvania Window Glass company from turning their factory over to the trust. It is intimated that should the injunction be continued it will be prejudical to the interests of the trust, and that other suits may be brought. Reports continue to conflict regarding the percentage of the country's productive capac-

ity that will be controlled by the new company. Quotations continue without change, as follows. Eastern jobbers quote 80 and 15 per cent. discount on American Window Glass for less than car lots. The American Glass Company's prices are as follows:

Districts.	A.	B.	C.	E.
5000 boxes or more.....	85	85	.....	85
Carloads.....	80 & 15	80 & 15	80 & 20	80 & 15
3000 boxes or more.....	80 & 20	80 & 20	.....	80 & 2½
1000 boxes or more.....	.....	.....	85	.....

These prices are subject to freight allowance.

Oils.— *Linseed Oil.*—Announcement was made by Linseed Oil manufacturers on September 28 of a reduction in the price of City Raw Oil of 4 cents per gallon, which results in a price of 40 cents in lots of five barrels or more, and of 41 cents in lots of less than five barrels. The market is steady at these figures, with outside brands obtainable at 1 to 2 cents per gallon less. Calcutta Raw has advanced to 65 cents per gallon. The situation is not without its perplexities. Spot Oil is scarce, and the price of seed is advancing. It is intimated that the latter may be attributed to speculation. On the other hand the Seed crop is estimated to be the largest the country has produced, and new Seed is coming in freely. Competition among manufacturers is active, while demand for quantity is comparatively light, large buyers, as a rule, having covered their requirements until the first of the year at former low prices. Prices have recently followed fluctuations in the price of Seed, and would appear to indicate that crushers are not sure of the future of the market.

Spirits Turpentine.— The market has advanced slightly during the week upon Southern advices of steady values and lighter receipts. Only a moderate demand is experienced at this point, with receipts equal to requirements. Quotations are as follows: 52 cents for Southern and 52½ cents per gallon for machine made barrels.

Need for an Association of Hardware Manufacturers.

THERE has for some time been a recognition on the part of prominent manufacturers that it would be advantageous to have an organization of some kind which would bring together for consultation, and concerted action if need be, representative Hardware manufacturers in the different lines, and wherever the matter has been broached the wisdom of the suggestion is recognized. The object of such an association would not be to regulate prices, but rather to consider matters of common interest, and perhaps in some cases to reach an understanding in regard to questions in which it is desirable to have concerted action.

There are obviously many subjects which might appropriately be considered by such an organization, such as terms and credits, the form of contract for the sale of goods which would do away with vague and unspecified orders, the cultivation of export trade and matters connected therewith, the practice of imitating patterns or brands, the policy to be pursued toward department stores, questions in regard to wages and the manufacturers' relations to labor, the matter of special brands, which is a troublesome question in a good many lines, freight and classification questions, various aspects of business methods, &c. Other subjects would doubtless present themselves for consideration and will immediately occur to manufacturers as justifying steps toward the formation of such an organization.

The cultivation of acquaintance and fraternal relations between manufacturers, so many of whose interests are closely related, would be exceedingly desirable, and would be sure to result in mutual advantage. With the enormous capital invested and the recognized ability and position of so many of the manufacturers, such an organization would have great weight and would be in a position not only to advance the interests of its members but also to take action in many respects which would be for the benefit of the trade at large.

The success which attends the working of the exceedingly strong and well managed organization of the jobbers in advancing their own interests illustrates what can be accomplished by intelligent and concerted effort. There can be little doubt that there is a similar opportunity and need for a thoroughly representative association of Hardware manufacturers.

Correspondence.

Freight Rates to the Pacific Coast.

ST. LOUIS, September 30, 1899.

To the Editor: The article in *The Iron Age* of July 20, 1899, entitled "Postage Stamp *versus* Graded Rail Rates; Atlantic Coast Manufacturers and Pacific Coast Jobbers." has been sent me by several members of the St. Louis Traffic Bureau, with request that I state the facts to the readers of *The Iron Age* as they actually exist.

The principal object to be attained is to remove the charge of discrimination against the Great Northern and Northern Pacific railroads. The officials of these companies issued Tariff S. R. 188, effective May 1, 1899, after a careful hearing of both sides of the controversy, extending through nearly 12 months, and after nearly 12 months' experience with the extremely unjust rates previously in effect to North Pacific Coast points, and still in effect to California Coast points.

The changes made were in every case by a reduction in the less than carload rate. In no case was the carload rate advanced, nor did they, by any means, grant the rates asked for by the Hardware jobbers of St. Paul, Duluth, Chicago and St. Louis. The differences between carloads and less to North Pacific Coast points are still far greater than we think they should be, and afford the Pacific Coast jobber advantages over us difficult to overcome. Compromise figures were necessary, and we think the officers of those companies are to be congratulated for the firm stand they have taken in the interest of fair and open competition from all markets reached by them.

The contention of the jobbers of St. Louis, Chicago and the Middle West has not been so much the volume of the rate; the difference between the rate from the eastern seaboard and the Mississippi River to the Pacific Coast, as the difference between carloads and less than carloads, which is greater to Pacific Coast terminals than to any other territory in the United States, and the unreasonable adjustment of various less than carload commodity rates by reason of which many articles of analogous nature, taking the same classification where classification rates apply, and prior to June 25, 1898, took the same commodity rates to Pacific Coast and could be packed together.

These great differences between carloads and less than carload rates and variable commodity rates in less than carload articles were in effect not only from St. Paul, Mississippi River points and Chicago, but from Pittsburgh, Philadelphia, New York and all territory east of the Mississippi River. They are still in effect from all the territory named to California terminals.

It is claimed rates from territory east of the Missouri River to Pacific Coast points are made lower than to intermediate points to meet water competition via Panama and via Cape Horn. That water competition has

been a factor in making transcontinental rates is doubtless true. When it was a leading factor practically all commodity rates were made in any quantity, or when in carload lots the difference between carloads and less was much smaller than now, as shown by tariffs formerly in effect.

There is no natural movement in carloads by water. A water carrier can and does, under natural conditions, handle 1000 pounds, 10,000 pounds, or any quantity less than a carload, as cheaply per 100 pounds as for 20,000 pounds, 24,000 pounds or 30,000 pounds, the basis in effect for carloads by rail. Where a carload rate is in effect by water, it is by agreement between the water carrier and his rail competitor, and not by any necessity arising from water transportation.

The rates complained of by St. Louis, Chicago and cities of the Mississippi Valley were promulgated by the transcontinental lines effective June 25, 1898, against the protest of all interested familiar with the situation, except the jobbers of the Pacific Coast and a few manufacturers who were willing their customers, the jobbers of the Mississippi Valley, should be compelled to abandon their trade west of the Rocky Mountains, and that the retail trade of that territory should be forced by freight adjustment to buy from Pacific Coast dealers only.

The contention of the Pacific Coast jobbers has been from the beginning of this controversy that the merchants and manufacturers on and east of the Missouri River had no right to compete for the retail trade west of the Rocky Mountains. They demanded of the railroads a minimum difference between carloads and less of 50 cents per 100, varied commodity rates that would prevent the packing of analogous goods together, when shipped from the East, while from Pacific Coast points eastbound to their local territory Western classification applies and they can continue their old methods, the legitimate methods of shipping analogous articles together under a uniform rate and classification, thus reducing the comparative cost of handling goods shipped by them as compared with the cost to be borne when shipped to the retail trade from east of the Missouri River.

Their promise of protection to the railroads by shipping entirely by rail, abandoning the water lines to the greatest extent possible, was so flattering that it was accepted, and so far as California is concerned, the agreement seems to still hold good. If these conditions continue it is only a question of time until the entire retail trade of the territory west of the Rocky Mountains will be controlled by a few jobbers in Pacific Coast cities. It is to be noted that commodity rates, either in carloads or less, are very few indeed to interior points east of the Pacific Coast; therefore jobbers in those territories labor under the same disadvantage as ourselves.

It does not seem to be good business policy on the part of manufacturers who sell jobbers only to favor an adjustment of freight rates that will force them to sell a few jobbers in a limited territory, while with an equitable adjustment they would have as buyers for the same territory not only the limited number of jobbers on the Pacific Coast, but the St. Louis, Chicago and the interior jobbers west thereof as well.

The trade of the jobbers of the Mississippi Valley is certainly as great and of as much value to the manufacturers as that of the Pacific Coast jobbers alone. It therefore seems to me if the Atlantic Coast manufacturer is not with us in our contention for a fair adjustment between carloads and less than carloads, he certainly cannot afford to oppose us in this controversy with jobbers on the Pacific Coast.

Changes made by the Great Northern and Northern Pacific roads, as shown in Tariff S. R. 188, effective May 1, 1899, were not, as claimed by the Pacific Coast jobbers, for the purpose of establishing a graded rate basis, but to reduce the differences between carloads and less than carloads to a more reasonable figure. Even now the differences are too great, but are much more satisfactory than to California terminals, where rates effective June 25, 1898, still apply; for example:

Hand Agricultural Implements, St. Louis to Portland, Ore., and common points, are now: L.c.l., $1.35; c.l., $1.10; to San Francisco and common points, l.c.l., $1.60; c.l., $1.10.

Bicycles, St. Louis to Portland, &c.; L.c.l., $4; c.l., $2.40; to San Francisco and California terminals, l.c.l. $6; c.l., $2.40.

Cartridges to Portland, Ore., &c., l.c.l., $1.50; c.l., $1.25; to San Francisco, l.c.l., $1.75; c.l., $1.25.

Many Hardware articles, such as Spring Balances, Egg Beaters, Door Bells, Iron Letter Boxes, Horse and Wool Cards, Carpenters' Chalk, Butchers' Choppers and Cleavers, Curry Combs, Corkscrews, Meat Cutters, Files and Rasps, Molasses Gates, Bush Hooks, Ice Tools, Sash Lifts, Can Openers, Fruit Presses, Tree Pruners, Grass and Hedge Shears, &c., are taken, St. Louis to Portland, Ore., and common points, at the uniform rate of $1.50 per 100, while to San Francisco and California terminals, where rates are still made on basis demanded by Pacific Coast jobbers, rates on same commodities vary from $1.50 to $3 per 100 pounds.

The manufacturer or jobber who ships in carloads pays no higher rate than before; pays no higher rate to North Pacific Coast than to California points. He may now sell goods which may eventually reach the retailer west of the Rocky Mountains, not only to the jobber of Portland, Seattle and San Francisco, but also to the jobber of St. Paul, St. Louis, Chicago, and to the jobbers of inland cities, such as Spokane, &c. The jobbers of New York, Philadelphia, Pittsburgh, &c., may also compete for the less than carload trade of the North Pacific Coast, while if the Pacific Coast jobbers secure their demands for restoration of variable rates on less than carloads, and the minimum difference between carloads and less of 50 cents per 100 pounds, as now in effect to California terminals, not only will the jobbers of the Middle West be shut out of that trade, but also many manufacturers and all jobbers east of us.

So unfair do we consider the rate adjustment to the Pacific Coast that on August 7, 1899, we filed complaint before the Interstate Commerce Commission, under the title of "The Business Men's League of St. Louis, *vs.* the Atchison, Topeka & Sante Fé Railway, *et al.*," wherein our prayer is as follows:

"The petitioner prays that the defendants may be required to answer the charges herein, and that after due hearing and investigation an order be made commanding the defendants to cease and desist from said violations of the act to regulate commerce.

"(*a*) By removing the present unreasonable differences between carload and less than carload class and commodity rates.

"(*b*) By establishing a reasonable difference between carload and less than carload rates, shippers in all territories and buyers in any quantity being given due consideration.

"(*c*) By requiring any article, when taken from classification and lower rate in carloads being established thereon, to have a reduction in the same degree upon the same commodity in less than carloads.

"(*d*) By establishing reasonable rates, relatively, between Mississippi River points and the Pacific Coast, as compared with rates from the Eastern seaboard to the Pacific Coast.

"(*e*) By establishing reasonable rates, relatively, between Mississippi River points and intermediate points east of the Pacific Coast, as compared with rates from Mississippi River points to the Pacific Coast.

"(*f*) By making such other and further orders as the Commission may deem necessary in the premises."

Our request, if granted, will benefit every manufacturer and jobber on and east of the Missouri River; will not unjustly reduce the trade of the Pacific Coast jobber or prevent him from competing with us readily upon a fair and equitable basis in the territory west of the

Rocky Mountains. He will still have the advantage of being close to his trade. But our competition will greatly benefit every retail dealer and buyer in less than carload quantities in all of the competitive territory referred to.

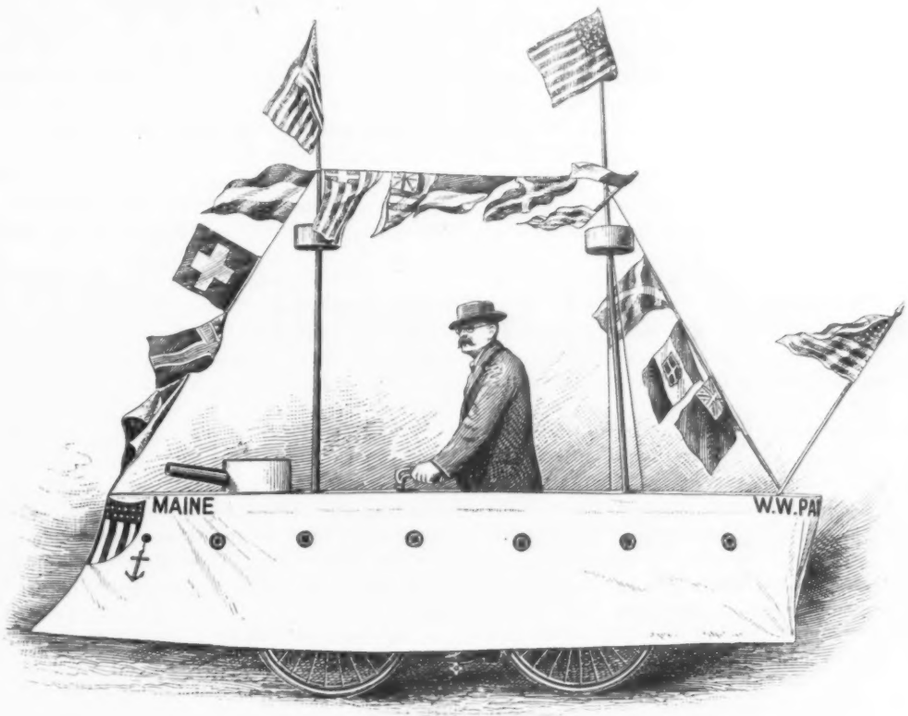
In conclusion, have the railroads a right to establish a basis of rates that will force the small buyers of the Pacific Slope to trade entirely with the Pacific Coast jobber? Should not the consumer and small buyer be given consideration in making freight rates? If so, our contention for a reduction in the differences between carloads and less is one that is favorable to the greatest number interested.

It is to be noted that this contention covers not only Hardware items, but other classes of merchandise. If statement contained herein is not clear to any reader of this article, or if further information is needed as to the contention of ourselves and other cities similarly situated, I will gladly furnish such additional information as may be needed upon application.

A. J. VANLANDINGHAM,
Commisioner St. Louis Traffic Bureau.

The Maine, A Float.

W. W. PADDOCK & SON, Wolcott, N. Y., dealers in Hardware, Bicycles, &c., recently improvised a display float for advertising purposes as here reproduced. It was used in the local firemen's field day parade, September 12, taking first prize. It was considered a decided success so far as advertising their Bicycle department was concerned, besides being a unique feature of the parade. A light frame work of wood was mounted on a ladies' Bicycle and covered with cloth. The masts and fighting tops were of tin. The extreme length over all was 12 feet 3 inches. W. H. Paddock, the junior member of the firm, propelled the float.



The Maine, a Float.

Request for Catalogues, &c.

HOLLOWELL & WISE, Penn Yan, N. Y., jobbers and retailers of general Hardware, advise us that they are revising their catalogue library, and would be pleased to receive the latest catalogues, price-lists and discount sheets from the trade.

Trade Items.

UNDER date of September 12 the W. S. Tyler Wire Works Company, Cleveland, Ohio, changed their name to the W. S. Tyler Company. This change was made simply as a matter of convenience, there being no change whatever in the management, W. S. Tyler continuing president and Proctor Patterson, secretary and treasurer. Within the past two or three years this company's business has been much enlarged, and the nature of it somewhat changed so that the old name was at times misleading, and hence the change to the W. S. Tyler Company.

HOBART AMES has been elected president of Oliver Ames & Sons Corporation, North Easton, Mass., succeeding the late Oakes A. Ames.

THE LEAVITT MACHINE COMPANY, Orange, Mass., in an advertisement on another page call attention to their Perfection Barrel Swing, which is designed for swinging a barrel in a pantry, cupboard, or under the counter or broad shelf in a Hardware or grocery store. The device is referred to as saving strength, room and labor, and will easily swing, it is stated, a barrel weighing 400 pounds.

AT the eleventh annual meeting of the New York State Association of Hardware Jobbers, held on the 21st ult., Capt. Frederick Barker of Barker, Rose & Clinton Company, Elmira, and Chas. W. Wells of Sidney, Shepard & Co., Buffalo, were elected directors for the ensuing year. The names of the other officials were given in our last issue.

THE tenth edition of "Handy Book" for trap shooters and sportsmen has just been issued by the King Powder Company and the Peters Cartridge Company, Cincinnati, Ohio. We are advised that this edition has several new features which make it more valuable than any of its predecessors. The synopses of the game laws, giving the open seasons in all the States and Territories and British America have been compiled with great care from the laws themselves. The trap rules are referred to as all up to date, and information is also given as to how to organize and conduct gun clubs and tournaments. The covers of the book are handsomely illuminated by the Trickromatic process, and a cut (reduced in size) of the front cover is presented in their advertisement in this issue.

C. E. Redfield & Son, Oelwin, Iowa, have disposed of their Hardware, Stove, Sporting Goods and Plumbing business to Starr & Son, who will continue at the old stand. G. A. Starr, who will manage the store, was formerly in business in Lamont.

The Iron Age Advertising Prize Competition No. 2.

THE Committee of Award in *The Iron Age* Advertising Prize Competition No. 2 have carefully examined the many advertisements contributed, and recommend that the prizes be awarded as follows:

First Prize, H. C. WISEMAN, Springfield, Ohio.

Second Prize, EVENSON BROS., St. Peter, Minn.

Third Prize, E. W. PETERSON, with E. P. Laugesen, Florence, Wis.

HONORABLE MENTION.—The committee have also reported the names of competitors who are entitled to honorable mention on account of the excellence of the advertisements submitted by them. This list will be published in a subsequent issue, as pressure on our space does not permit us to give it at this time.

THE ADVERTISEMENTS.—It will be observed that the three advertisements on which prizes were awarded differ widely in character and illustrate different styles of advertising, which will doubtless be suggestive to the trade. Without attempting to enumerate all the features of these advertisements which influenced them in their decision, the committee call attention to some of the merits of each: The advertisement winning the first prize is referred to by the committee as one which in a page with other advertisements would be sure to attract special attention and in such a way as to bring forcibly to mind the line of goods to which it relates and the place where they can be found. They also allude to the effective use in the advertisement winning the second prize of the phrase, "Just as good," and the striking illustration which enforces it, as well as to the manner in which the merits of the goods to which it relates are brought out. The advertisement for which the third prize is awarded is commended by them on account of its interesting and convincing statements, the taste and neatness of its arrangement and the effectiveness of the prominent line, "Stoves to Burn."

Several other advertisements submitted in the competition will be reproduced so as to give our readers illustrations of many other methods adopted by those who have

First Prize.

Things "Just as good"
Though often sold by dealers, are dear at any price.
The explosion of 4½ drs. of powder in a shot gun produces 100 lbs. of pressure to the square inch, and no $4.00 shot gun will long stand the strain.
Spencer Hammerless
will always bring down the bird if properly handled. We have unsolicited testimonials from the best wing shots in the city, and each writer dwells particularly upon the heavy charge the gun will safely carry.
Our Sacrifice Price $30.00
CHOICE OF ANY GAUGE.
EVENSON BROS.

Second Prize.

given careful and intelligent consideration to the matter of advertising.

Hardware Merchants' Advertising Cuts.

Some of our readers may perhaps desire to make use of the cuts in the advertisements on the opposite page, and they have accordingly been added to the other cuts which have been prepared for the advertising of local merchants. The cut representing "A Fall Opening in Prospect" is designated as No. 49, and is offered at 75 cents, and the cut in advertisement, "Things Just as Good," is designated as No. 50, and is offered at 50 cents.

The above cuts or others in the series will be sent postpaid on receipt of price by David Williams Company, 232-238 William street, New York.

NEVER BEFORE in Our History has there been such a Demand for Stoves
COAL
OIL
WOOD
Stoves to Burn!
OUR PRICES ARE THE LOWEST
ONE GLANCE AT OUR MAM'OTH STOCK WILL CONVINCE YOU OF THIS FACT!
"Scarcity of Raw Material" has been the Cry. Prices Advancing Every Day.
WHAT WERE WE DOING ALL THIS TIME?
Why taking advantage of every turn of the market—buying at every favorable oppportunity.
We Have a Man
In our employ who devotes all his time to Stoves. So do not fail to hear him sing the Stove song
IT'S A HUMMER!
Pleased Customers are our best advertisements.
WHAT IS THE RESULT?
We have an unusually large and well asssorted stock of stoves and to-day WE CAN SELL YOU A STOVE AT LESS than any retail dealer in this vicinity would have to pay for the same article.
REMEMBER THE PLACE.. E. P. LAUGESEN—FLORENCE, WIS.—

Third Prize.

Under the head of "Situations Wanted" in this issue appears an advertisement signed "Energy," in which application is made for the position of business manager by a gentleman of large and varied experience. The advertiser informs us that he would take a pecuniary interest in the business with which he might become identified after six months' time if everything was agreeable.

THE ORR & LOCKETT HARDWARE COMPANY, 71 and 73 Randolph street, Chicago, are giving increased attention to the Stove trade. They make an unusually large display of 'Majestic Steel Ranges in that part of their store which fronts on State street, showing them in all styles, including Combination Coal and Gas Ranges. They advise us that they are doing a fine business in Combination Ranges, as many Chicago architects are specifying them to be built in as part of the finish of houses.

Price-Lists, Circulars, &c.

ATWATER MFG. COMPANY, Southington, Conn.: Carriage Makers' Hardware, Special Forgings and Wrought Ox Shoes.

COMBINATION FENCE WORKS, Council Bluffs, Iowa: Catalogue No. 14 relating to Fencing, Gates, Corn Cribs, Shoveling Boards, &c. Special attention is called to Bloomer's Patent Single Strand Field and Corral Fencing and Portable Corn Cribs, on which lines, the company advise us, they are having an excellent trade.

HELLER, ALLER & CO., Napoleon, Ohio: Illustrated catalogue No. 10 of the Baker and Pirate Wind Engines, Galvanized and Painted Steel Towers, Force Pumps, Tanks, &c.

Among the Hardware Trade.

Hoffman & Vawter, Elwood, Ind., have removed to a new location, which is referred to as one of the best in the city.

W. C. Nason, dealer in Hardware, &c., South Waterboro, Maine, is erecting a new building for his business.

S. M. & W. J. Young have succeeded Irby & Young, wholesale and retail dealers in Hardware, Stoves, Tinware, Sporting Goods, Farm Implements, &c., Raleigh, N. C. They are enlarging their establishment and making a number of improvements in its arrangement and appointments.

Sturmer Bros., Port Huron, Mich., have materially enlarged their establishment, which is now nearly 40 feet longer than formerly.

Turner & Smith have recently embarked in the Hardware business, at Ashtabula, Ohio, having bought out the stock formerly carried by V. D. Latimer. The members of the firm have had a number of years' experience in this line, and are intending to increase the stock thus acquired.

Durgan & Judkins have lately opened up at Farmington, Maine, carrying Shelf and Heavy Hardware and Carriage stock. Their store has been fitted up with the Steel Shelf Boxes made by W. C. Heller & Co. of Montclair, N. J.

J. P. Eckels & Co. have succeeded Palace King Hardware Company, Decatur, Ill.

J. C. Taylor & Co. are successors to T. Lyons & Co., at Albany, Texas.

Wadsworth & Byers have embarked in the Hardware business at Pittsford, Mich. They are handling both Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c.

Raffruf & Ball, Rome, N. Y., wholesale and retail dealers in Hardware and Bicycles, have opened a branch retail store at Oneida, under the management of Frank A. Amann of Oneida.

A. Wichmann & Son, Hardware merchants, Wausau, Wis., have lately purchased the building they occupy and are making an addition to it, 30 x 60 feet, which will provide an establishment 30 feet wide by 120 feet in length.

E. M. Austin has purchased the business of Wooley & Simmons, Litchfield, Ill., and has combined it with another stock acquired some months since, making a very large and complete assortment of goods.

The Rocky Ford Hardware Company have purchased the business of Ellingwood & Hauck, Rocky Ford, Col.

The Ochsner Hardware Company have removed their stock into more commodious quarters at Kimball, S. D. Their store is 40 x 80 feet, two stories.

S. A. Feay has disposed of a half interest in his retail Hardware and heating business at Rock Rapids, Iowa, and the style of the firm is now Feay & Collins.

A. M. Drake & Son are successors to A. M. Drake, at Carthage, Mo.

Haag & Hewison have dissolved partnership in the Hardware business at Menominee, Wis., and Edward Haag is successor at the old stand.

Rutherford & Payne have purchased the business formerly conducted by Ed. P. Hall, at Huntsville, Mo.

H. O. Rindy has lately entered the general Hardware, Stove and Sporting Goods business at Fenton, Iowa. Mr. Rindy occupies a building 24 x 60 feet, with shop 24 x 20 feet.

The store of J. C. McGeary, Leechburg, Pa., was robbed a short time since of $100 worth of Revolvers, Razors and Pocket Knives.

Dunbar & Buder is the style of a new Hardware firm at Mendon, Mich.

Franz-Howell Hardware Company, Webb City, Mo., have been incorporated with a capital of $18,000. E. W. Franz is president and treasurer; F. S. Howell, vice-president, and W. E. Daugharty, secretary. The company deal in general Hardware and Mining Supplies and also conduct a plumbing and tinsmithing department.

A. O. Horne & Son, Greenville, Texas, have removed into more convenient and commodious quarters. They report business as fairly good.

Lewis T. Hooker has sold out his stock at Angelica, N. Y., to D. E. Corbin, who continues at the old stand.

Price & Son, Marion, Ind., have recently put in a new Gun showcase and new counter and also have added largely to their stock of Guns.

Hessel & Leykom have lately completed a large addition to their store at Antigo, Wis. They are intending to put in a plate glass front and otherwise improve the establishment's exterior as well as the interior. They have largely increased their stock of Sporting Goods and intend adding materially to their Buggy and Farm Implement stock.

The W. H. Smith Hardware Company, Parkersburg, W. Va., whose establishment was struck by lightning and destroyed some time since, have fitted up warerooms for temporary quarters, where they are continuing the wholesale business. The loss by the fire on building and stock was $100,000, partly offset by insurance of $48,000.

Kaufman & Davis, Anderson, Ind., have purchased the Barnes Hardware stock, for the accommodation of which they have rented another room. They carry a general stock of Shelf and Heavy Hardware and Sporting and Athletic Goods, and have an establishment containing nearly 20,000 square feet of floor space.

One hundred dollars' worth of goods were recently stolen from the store of J. R. Dumas, at Rockwall, Texas.

T. S. Weaver has purchased the business of the Weaver Hardware & Stove Company, Springfield, Mo.

Alexander & France have purchased the business of R. E. Hull, Cutler, Ohio. They are also conducting a general merchandise store.

Nelsonville Hardware Company, Nelsonville, Ohio, have incorporated with a capital stock of $8000. They have put in new shelving and otherwise improved the interior of their store.

B. H. Rowley has succeeded Rowley & Cross, at Bliss, N. Y., dealers in Hardware, Tinware, Stoves, Agricultural Implements and Bicycles.

J. A. Y. Ashby has admitted a partner in his Hardware business at Washington, Iowa, under the firm style of Ashby & Nicola.

J. R. Vosburgh & Brother, Cycle dealers in Johnstown, N. Y., are adding a line of Hardware Specialties, Sporting Goods, &c.

Smith, Van Horne & Co. have sold out their wholesale and retail Hardware business at Oswego, N. Y.

Johnson & Greiner have purchased the business of the Hastings Hardware Company, Hastings, Minn. They will take possession October 16.

Radcliffe Mercantile Company have bought the Hardware stock of J. W. Pearce & Sons, Radcliffe, Iowa.

E. H. Johnston has purchased the store of F. H. Townsend, at Limerick, Maine.

Geo. W. McLane & Sons have purchased the business of Morgan & Townsend, at Punta Gorda, Fla., and are continuing at the old stand.

H. A. Dancliffe, Jr., is successor to H. A. Dancliffe & Co., Manly, Iowa.

W. R. Duskam & Co. have recently opened up in the retail Hardware, Stove, Tinware, Sporting Goods, Mining Supplies and plumbing and steam fitting business at Houghton, Mich.

Fehr & Cummings are successors to Duggan & Co., Spring Valley, Ill.

Mackey & Utiger have bought out Sneed & Jones, at Mena, Ark. The business is principally retail, but some wholesaling is done.

The Quernheim Hardware Company, of which H. W. Quernheim is president and treasurer and A. H. Quernheim secretary, have been formed and will deal especially in Builders' Hardware and Supplies, at 213 North Tenth street, St. Louis.

Miscellaneous Note.

Galvanized Wire Nails.

In our issue of September 7 there appeared a communication on the subject "Rusting of Wire or Cut Nails When Used on Work Exposed to the Weather," special attention being called to the fact that shingle nails rust out very rapidly, leaving the shingles without support. In this connection we are advised that the American Steel & Wire Company have provided for this emergency steel wire nails heavily galvanized after they have been cut, so that every portion of the nail—head, shaft and point—is thoroughly covered with a very heavy coating of zinc, rendering the nails absolutely rust proof. Shingle nails, slating nails, roofing nails, fence nails, car nails, and others particularly exposed to moisture, when thus coated are referred to as practically everlasting, while the cost is but a trifle more than that of the unprotected nails. The American Steel & Wire Company recently distributed a large number of sample cards on which were ordinary nails and their duplicates which had been galvanized. All of these nails had been exposed to the weather for the same length of time and the card was a striking object lesson on the rust-proof character of galvanized nails. These sample cards we understand can be obtained by addressing the Chicago office of the American Steel & Wire Company.

Revolving Search Light.

The Bridgeport Brass Company, 19 Murray street, New York, and Bridgeport, Conn., have just put on the market a unique bicycle acetylene gas lantern, as here illustrated. It is called the Revolving Search Light, the lower part containing carbide and water chambers resembling the Search Light acetylene gas lamp illustrated in these columns February 16 last. Fig. 1 represents the

lamp attached to their wishbone bracket, which is fastened to both forks, so that the light always follows the direction of the front wheel, the bracket not interfering with friction brakes, one of which is shown in Fig. 1. Fig. 2 is a sectional view, showing the location of the carbide and water compartments, &c., while Fig. 3 illustrates the principal parts detached. It will be seen the water is below not over the carbide. A wick about ½ inch in diameter when turned up feeds by capillary

Fig. 1.—Revolving Search Light on Wishbone Bracket.

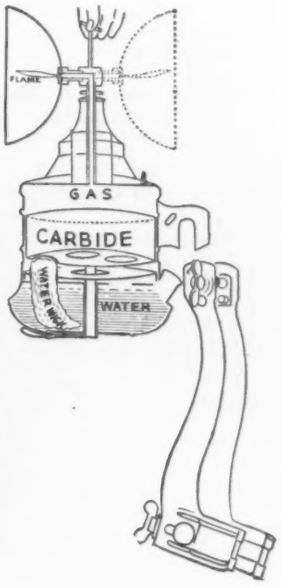


Fig. 2.—Sectional View of Both.

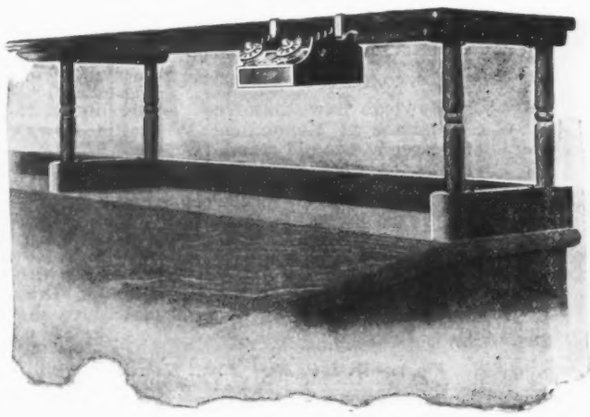
attraction water to the bottom of the carbide chamber, the carbide being held in three separate compartments in a square of thin muslin. This method gives an even water supply to the carbide unaffected by jolting. The reflector is cup shaped, white enamaled inside and dark blue outside, the same as agate ware, and by means of

Fig. 3.—Showing Parts Detached.

the T handle the light can be thrown in any direction, swinging entirely around, if necessary, as seen in Fig. 2, although ordinarily it is thrown directly ahead. The burner is a horizontal one without glass front, projecting a round flame on a plane with the roadway. If a light is not wanted after filling the compartments the water reservoir can be swung part way to one side, so that the wick is absolutely covered and no moisture allowed to contact with carbide. The lamp is lighted in the same manner as any ordinary gas jet, and the water fed to the carbide by raising the wick, as oil is fed to a flame in a kerosene lamp. Turning the wick up slowly gives gas pressure at once, generating an even, steady and moderate supply as long as the carbide lasts, readily controlling the volume of light as the wick is raised or lowered. The lamp and bracket are finished in polished nickel.

The Hayne Suspended Ink Well.

The accompanying illustration shows the Hayne suspended ink well, adapted to use on bookkeepers' upright desks. The manufacturers remark that while the ink well was first designed especially for roll top desks they saw that it possessed all the advantages for bookkeepers' desks that it did for the roll top variety. The company are now filling orders for ink wells with special clips, by which they can be attached to the rack of standing desks. Among the advantages claimed is that of having the entire surface of the desk free from ink bottles with all the ink—two or three kinds if desired—in a compact unused space, always in one spot; also that the construction of the ink bottles is such that there is no evaporation, no accumulation of dust and no possibil-

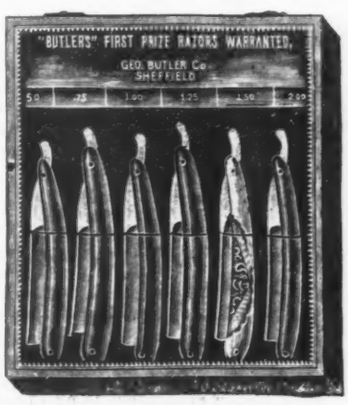


The Hayne Suspended Ink Well.

ity of overloading the pen with ink, thereby avoiding waste and ink stained fingers and books. Each frame or basket is fitted with two flint glass bottles and sponge cup. Three ink bottles may be used if desired by substituting one for the sponge cup. The impossibility of upsetting the ink bottles or overinking the pen is due, it is explained, to a rubber tube inserted in the mouth of the bottle, which insures a uniform, thorough inking of the pen but renders impossible taking up too much ink or to soil the pen holder. The device is manufactured by the Universal Specialty Company, Pike Station, N. H.

Razors in Display Cases.

George Borgfeldt & Co., Third, Fourth and Wooster streets, New York, have put on the market a set of Butler's Sheffield razors in a glass front, easel back, velvet lined case, for selling and display purposes, as here illus-



Razors in Glass Front Display Cases.

trated. The top and bottom sections are double hinged at the back and held together in front with two clasps. In size the case is 8½ x 9½ inches, with depressions in the bottom half to hold six razors, one each to retail at 50 cents, 75 cents, $1, $1.25, $1.50 and $2 at which prices there is a large profit to both jobber and retailer. They also have a similar assortment in a like case as follows: one at 50 cents, two at 75 cents and three at $1 each. These razors are made by George Butler & Co., Sheffield, an old and well-known concern, and each razor is guaranteed. Should any prove defective they will be exchanged for new ones.

W. I. C. Store Front Guard.

Shenango Specialty Works, Sharpsville, Pa., are putting on the market the store front guard shown herewith. In Fig. 1 the device is illustrated closed as a window guard, and in Fig. 2 it is shown open as an exhibition rack. When the shelves are down they are supported by extension arms and when they are pushed up they are locked on the under side with a padlock to make

Fig. 1.—W. I. C. Store Front Guard.

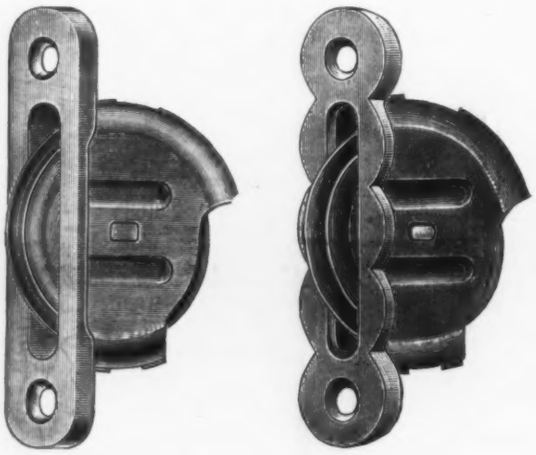
them stationary and solid. When down the shelves are easily removed from the windows, as the hinges are hooked on, and the arms are connected with an open link to make a portable frame. In designing the guard the object was to produce a display rack that could be closed up against a store window and make a guard which would not obstruct the light at night. The guard can be made in one, two or more shelves, as desired, and to cover as much of a window as is required. The front

Fig. 2.—Store Front Guard Open.

of the frame is wide enough for a line of lettering, it is explained, and on the fronts and ends pins and hooks can be placed, so as to hang vegetables, produce, &c. The sides, bottom and top can be made fly proof and the top can be fitted with a sprinkler, so as to sprinkle vegetables. The makers state that in construction the guard is strong and that it is not an expensive article.

The Palmer All Steel Pulleys.

We illustrate herewith two forms of steel sash pulleys which are made by Palmer Hardware Mfg. Company, Troy, N. Y. No. 1 shows the Common Sense and No. 2 the Machine Mortise pulley. The manufacturers refer to the solid closed back cord housing, covering the entire cord bearing on the wheel and curved around and equidistant therefrom at all points, positively preventing the cord leaving the wheel, as a feature of great importance to the builder and house owner. They also refer to the following advantages: That there is no breakage in use or in transportation, that they possess rigidity and strength, that they are light in weight, consequently low freights; that their wearing qualities are much better



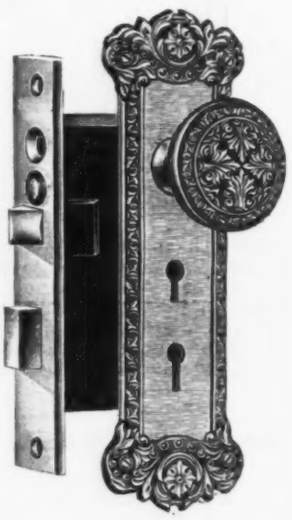
No. 1. No. 2.

The Palmer All Steel Pulleys.

than those of cast iron, that they have been subjected to extreme tests for both wear and strength and found superior to cast pulleys in every particular.

Albany Design.

Norwalk Lock Company, South Norwalk, Conn., have brought out the Albany design, as here illustrated, in a full line of builders' hardware for exterior and interior trim. In this connection they have issued a 12-page booklet devoted exclusively to illustrating and describing this design and the various pieces needed for trimming a building. In it are shown various combinations of sets for front, vestibule, inside and sliding doors, together with flush, hook and bar sash lifts, electric bell



Albany Design in Builders' Hardware.

push, escutcheons, knobs, &c. The announcement is made that as other new designs are put on the market a similar booklet of each will be brought out.

William W. Welsh, Rockville, Md., is now occupying his new building, 100 x 24 feet in dimensions. His stock comprises Hardware, Agricultural Implements, coal, lime, brick, &c. Mr. Welsh was robbed of a small quantity of goods a short time since.

The Larimer Door Check and Spring.

We show herewith two illustrations of door checks made by the Larimer Mfg. Company of Latrobe, Pa., Fig. 1 illustrates a check only, intended to be used on a screen or any light door which has a spring of some description. The device is referred to as exceedingly simple in its construction, with no little delicate parts to get out of order and nothing to break. One of the important features about it is shown to be the plunger head that forms the check, this being provided with a complete automatic valve the same as is used in their higher priced checks, which gives durability and fills the bill for a first-class screen door check. Fig. 2 represents a complete door check and spring, made in three sizes, the smallest size especially adapted to screen doors, and the large sizes suitable for doors of any weight. This check and spring, it is explained, is constructed so as to be attached to the jamb side of a door only, and is especially adapted to storm doors or any door opening out or whereever it is not convenient to attach the company's regular make to the hinge side of a door. It is adjustable in all its parts, it is stated, and can be attached to a door under any conditions.

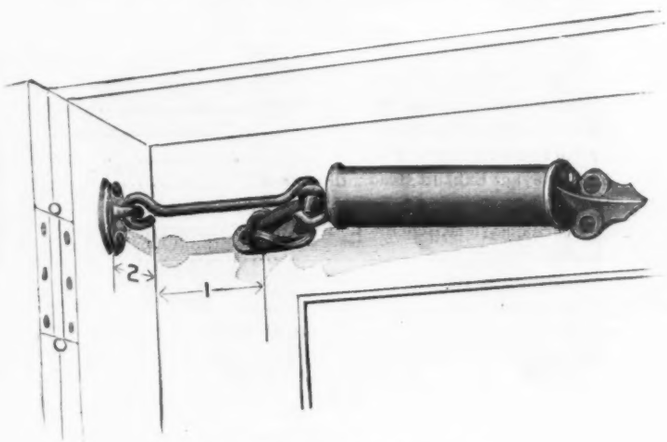


Fig. 1.—The Larimer Door Check.

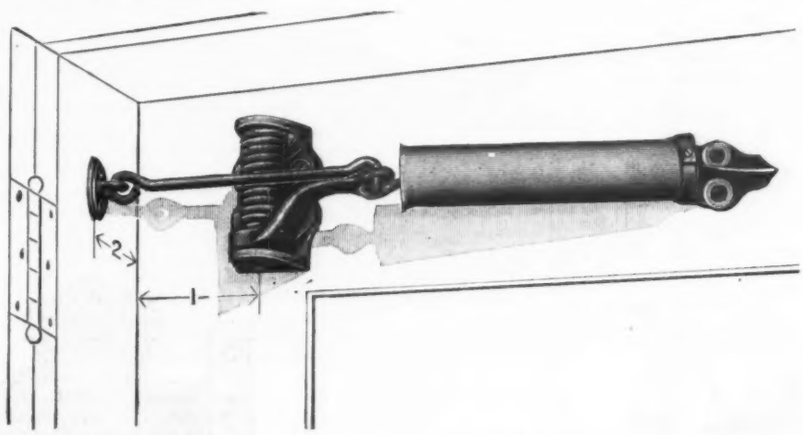


Fig. 2.—The Larimer Door Check and Spring.

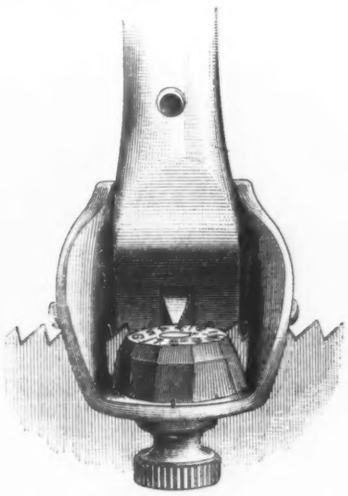
Detroit Bicycle Grip.

Detroit Leather Goods Mfg. Company, 483-485 Fourteenth avenue, Detroit, Mich., are making the Detroit all leather bicycle grip, here shown. It is made entirely of leather, wound as seen in the illustration, each end being tipped with leather ferrules. One of the features of the grip to which the manufacturers draw attention is its durability.

Detroit All Leather Bicycle Grip.

The Taintor Positive Saw Set No. 93.

Taintor Mfg. Company, 9-15 Murray street, New York, have recently made an improvement in their saw set, as shown in the accompanying illustration. The improvement consists of a notch in the center of each face at the base of the anvil to correspond with a mark in the center of the frame at this point. The object of the notches is to aid in quickly and accurately adjusting the anvil so that it will present the surface correctly to the tooth of the saw being set. In adjusting the anvil the correct notch is placed directly over the mark on the frame, as shown in the cut. The ten faces of the anvil, with the aid of a washer placed under the anvil for fine adjustment, permit of 20 adjustments, allowing the setting of all kinds of saws from a fine back saw to the coarser grades. The faces of the anvil are numbered, so that by using the same face on any particular saw the same amount of set to the teeth can always be obtained. The manufacturers also call attention to the fact that in operation the handles first clamp the saw against the lower part of the anvil, when further pressure upon the handles bends the tooth to conform to the face and side of the anvil, thus preventing the set from slipping while the tooth is being set. A recent circular issued by the company contains a detailed description of the saw set and refers to the favor with which it is regarded by practical men who have used it.

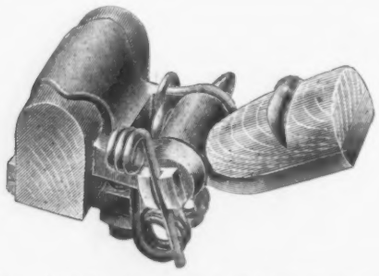


The Taintor Positive Saw Set No. 93.

The Baker Hardware Company, Sioux City, Iowa, have been incorporated with a capital stock of $100,000. They do a strictly wholesale business in Shelf Hardware, Stoves, Tinware, Tin Plate, Sheet Iron, &c. They have remodeled their office and made other improvements, which enable them to take better care of business than heretofore. During the present year they have put two additional men on the road.

Eclipse Anti-Rattler and Bolt Holder.

John W. Bell & Co., Mercer, Pa., are putting on the market an anti-rattler and bolt holder combined, called the Eclipse, an illustration of which is given herewith. It is claimed for this device that it is a first class anti-rattler, a simple, sightly and safe bolt holder, and a quick shifter. The anti-rattler and bolt holder are made from one piece of spring wire, retinned after it is cut. The



Eclipse Anti-Rattler and Bolt Holding Combination.

bolt, which is of steel, is of special design, having a groove across the head to receive the bolt holder. The point is tapering to allow its being driven into place. No nut is needed. It can be used on any ordinary shaft coupling, new or old, without change or adjustment. A change of thills can be made in one minute. The device has been patented.

Saw Steel Cabinet Scrapers.

The cuts herewith shown relate to cabinet scrapers put on the market by Geo. H. Bishop & Co., Lawrenceburg, Ind., New York office 100-102 Reade street. The

No 1.

No. 2.

No 3.

Saw Steel Cabinet Scrapers.

scraper handle is made of beechwood with varnished edges. The blade, which is shown in different positions in the illustrations, is held by a japanned clamp secured by a thumb nut on the top of the handle. The blade can be slid from side to side in the handle to suit the work being done. When very particular work is required one end of the blade can be guided by taking hold of it by the hand as shown in cuts Nos. 1 and 2. It is explained that the blade is held firmly in the holder and at the correct slant to permit of steady, even strokes. The point is made that blades held in the operator's hand without the holder become hot and burn the hand, which is not the case when the holder is used.

Ewing Bros. & Co., Gallatin, Tenn., have erected a new building, larger and more convenient than the old. They are dealers in Shelf and Heavy Hardware, Sporting Goods, Farm Implements, &c.

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Current Hardware Prices.

REVISED OCTOBER 3, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00...33⅓&38⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ ℔ 7¼@7¾¢
Hay-Budden, Wrought.....8¼@8¾¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson.....₩ ℔ 7¼@8¢
Trenton, Wrought.....₩ ℔ 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur....70&10@75%
Boring Machine Augers.....70&10@75%
Car Bits, 12-in. twist.....60&10&10@70%
Jennings' Pattern:
Auger Bits.....60&10@60&10&5%
Ford's Auger and Car Bits..40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....70%
Snell's Bell Hangers' Bits.....50%
Snell's Car Bits.....60&10&5@70%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....60&10&10@70&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $36; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut..gro. $2.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists.....50&5@50&10%

Hollow Augers—

Beaney's Adjustable, ₩ doz.....$18.00
Douglass'.....33⅓@33⅓&10%

Ship Augers and Bits—

Ford's.....40&10@40&10&10%
Snell's.....40@40&10%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&10%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $2.00@3.75
Handled, Socket..gro. $11.00@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$6.00@6.25
First Quality, other brands$5.50@5.75
Jobbers' Special Brands:
Good Quality.....$5.00@5.25
Best Quality.....$5.50@5.75
Cheap, Handled Axes....$4.75@5.00
Beveled, add 25c doz.

Note.—Jobbers' prices are now usually lower than the manufacturers.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	Steel.
Concord, loose collar...	6¼c	6 c
Concord, solid collar...	6¾c	6¼c
No. 1 Common.....	6 c	4¾c
No. 1¼ Com. New Style..	5¼c	5¼c
No. 2, Solid Collar.....	5¾c	5¼c
Nos. 7, 8, 11 to 14.....	60&10%	
Nos. 7, 8, 11 to 14, 100 sets.....	60%	
Nos. 15 to 18.....	50%	
Nos. 19 to 22.....	60&10%	

5% cash 10 days.

Balances—

Sash—

Caldwell low list.....35%
Pullman's.....60%

Spring—

Spring Balances.....50@50&5%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb...3¾@4c

Beams, Scale—

Scale Beams, List Jan. 12, '88.....40&10@40&10&5%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $5.50
No. 10 Cast Handle Dover..₩ gro. $7.00
No. 10 Steel Handle Dover..₩ gro. $7.00
No. 15 Extra Heavy Steel Handle, ₩ gro $14.00
Rival, ₩ gro.....$9.00
Lyon's, Standard Size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ doz. 75¢

Bellows—

Blacksmith—

Standard List.....70@70&5%

Net Prices.

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each..	*$4.25*	*4.50*	*5.25*	*5.75*	*6.50*	*7.75*
Extra Length:						
Each.	*$4.75*	*5.25*	*5.75*	*6.50*	*7.50*	*8.75*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.75*	*6.75*

Bells—Cow—

Ordinary goods.....75&10%
High grade.....70@70&10%
Jersey.....75@75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....55%
Ho-e, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....45&10@45&10&5%

Hand—

Hand Bells, Polished.....65@65&10%
White Metal.....65@65&10%
Nickel Plated.....50@50&10%
Swiss.....65@65&10%

Miscellaneous—

Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....50&10@60%
Wilmot & Hobbs Mfg. Co., Gongs.....65@70%

Belting

Rubber—

Common Standard.....70&10@75%
Standard.....60&10@70%
Extra.....60@60&10%
High Grade.....60@60&10%

Leather—

Extra Heavy, Short Lap.....50&10%
Regular Short Lap.....60@60&5%
Standard.....60&10@60&10&5%
Light Standard.....70&10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Bretteli Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%
John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....75&5@75&10%
Eddy's Steel.....60&10@70%
Hartz Steel.....50&10@60%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand...50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards, Stove—

1899 List:
Zinc.....80%
Crystal and Embossed.....40%

Bolts—

Carriage, Machine, &c.—

Common, list Jan. 30, '95.50@50&10@..%
Norway Iron, $3.00, list Oct. 7, '84..75&10@75&10&5%
Phila. Eagle, $3.00 list.....80@80&10%
Bolt Ends, list Jan. 20, '95.....60&10@....%
Machine, list June 12, '96.....50&10@....%

NOTE.—Jobbers' prices on Bolts are now generally lower than manufacturers'.

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.27*	*.30*	*.33*	*.43*	*.66*

Cast Iron Bottom, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.83*	*1.05*	*1.65*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.10*	*1.35*	*1.87*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.49*	*.77*	*.88*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz	*$0.44*	*.50*	*.61*	*.70*	*1.28*

Wrought Barrel.....70&10@75%
Wrought Barrel, Bronzed.50@50&10%
Wrought Flush. B. K.....50&20@70%
Wrought Shutter.....60@60&10&5%
Wrought Square Neck.60&10&10@70%
Wrought Sunk.....60@60&10%
Ives' Patent Door.....62½&62½&10%

Stove and Plow—

Plow.....50&10@60%
Stove, list August 27, 1898..62½&@....%

Tire—

Common, list Feb. 28, '8360@60&10@..%
American Screw Company:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Bay State, list Feb. 28, '83.....60%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Eclipse, list Feb. 28, '83.....60%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....60%
Keystone Phila., list Oct. '84.....75%
Norway Phila., list Oct. '84.....70%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$3.50*	*4.50*	*5.00*	*6.50*
Inch.....		*2¼*		*2½*
Per Doz.....		*$7.50*		*10.35*

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $3.50 each.

Boring Machines—See *Machines, Boring.*

Boxes, Mitre—

Seavey's, each $4.00.....50&10%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American...$1.10@1.80
Barber's.....60@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....60&10&5@60&10&10%

Brackets—

Cast Iron, plain.....75@75&10%
Wrought Steel.....70&10@75&5%
Bradley's Wire Shelf.....75&10@80%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₩ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....35@35&5%
Cast Brass, Tisbout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@75%
Loose Pin.....70&5@75%
Mayer's Hinges.....70&5@75%
Parliament Butts.....70&5@75%

Wrought Steel—

Loose Joint
Table and Back Flaps..
Narrow and Broad.....
Inside Blind
Loose Pin.....
Loose Pin, Ball and Steeple Tip.....

70&10@75%

50@50&5%

Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....10%
1300 series.....40%
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks, Toe—

Burke's, One Prong, Blunt..5¢.....5%
Burke's, One Prong, Sharp..6¢.....12½%
Burke's Two Prong, Blunt..6¢.....12½%
Burke's Two Prong, Sharp.7¢..10&5&5%

Can Openers—See *Openers, Can*

Cans, Oil—

Galvanized Blue Band, 1-gal., ₩ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₩ gro. $54, 5-gal. $60; 10-gal., $180.00
Glass Oil.....₩ doz. $1.90@$2.20

Caps—Percussion—

Eley's E. B.....50¢
G. D.....per M 32@34¢
F. L.....per M 37@40¢
G. E.....per M 47@50¢
Musket.....per M 57@60¢

Primers—

Berdan Primers, $1 00 ..... 5%
B. L. Caps (Sturtevant Shells) $1.00 ..... 5%
All other primers ..... $1.10 @ $1.12

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B Caps, Com., Ball Swgd. $1.90
B. B Caps, Round Ball ... $1.12@1 18
Blank Cartridges:
32 C F., $5 50 ..... 10@5%
38 C F., $7 00 ..... 10@5%
22 cal. Rim, $1 50 ..... 10@5%
32 cal Rim $2.75 ..... 10@5%
Central Fire 25%
Pistol and Rifle ..... 15@5%
Primed Shells and Bullets ..... 15@5%
Rim Fire Sporting 50%
Rim Fire, Military ..... 15@5%

Casters—

Bed ..... 60@10%
Plate ..... 60@10%
Plate, part Brass ... 50@10%
Philadelphia ..... 60@10%
} *Extra 10% often given.*

Martin's Patent (Phœnix) .... 60@60&5%
Payson's Anti-friction Furniture 70%
Payson's Anti-Friction Truck 70%
Standard Ball Bearing 45%
Tucker's Patent, low list ..... 50@50&5%

Cattle Leaders—

See *Leaders, Cattle.*

Chain—

American Coil, Full Casks:
3-16 1/4 5-16 3/8 7-16 1/2 9-16
8.25 6.50 5.50 4.75 4 60 4.50 4.40
5/8 3/4 7/8 1 inch.
4.50 4.25 4.15 4.15 cents per lb.
Less than Cask lots add 1/4@1/2c per lb.
German Coil, list July 24, '97 60&10@60&10&10%
German Halter Chain, list July 24, '97 ..... 60&10@60&10&10%
Trace, Wagon and Fancy Chains, list April, '98 ..... 50&10@50&10&5%
Jack Chain, list July 10, '93:
Iron ..... 50&5@60%
Brass ..... 50&5@60%
Gal. Pump Chain ..... lb. 5@5¼c
Breast, Hitching and Rein Chains
Covert Sad. Works 70%
Covert Mfg. Co.:
Breast ..... 40&2%
Halter ..... 40&2%
Heel ..... 40&2%
Rein ..... 40&2%
Stallion ..... 40&2%
One da Comequal y:
Nigr ro Coil and alters. 60&5@65&5%
Nigr a Cow Ties ..... 50&5@ 5&5%
Am. Coil and Halters ... 50&10&5@6 %
Am Cow Ties ..... 45@50%

Chalk—(From Jobbers.)

Carpenters', Blue ..... gro. 50@52c
Carpenters', Red ..... gro. 45@47c
Carpenters', White ..... gro. 40@42c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's 40%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

Chisels—

Socket Framing and Firmer

Standard List ..... 75@75&10%
Buck Bros 30%
Charles Buck 30%
Swan's ..... 75@75&5&2½%
L. & I. J. White ..... 30@30&5%

Tanged—

Tanged Firmers ..... 40&10@50%
Buck Bros 30%
Charles Buck 30%
L. & I. J. White, Tanged ..... 25&5%

Cold—

Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality ..... lb. 12c
Cold Chisels, ordinary ..... lb. 8@9c

Chucks—

Beach Pat., each $8.00 ..... 20%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks 30%
Independent Lathe Chucks 40%
Improved Planer Chucks 20%
Universal Lathe Chucks 40%
Face Plate Jaws 35%
Union Mfg. Co.:
Combination 40%
Cear Drill 30%
Geared Scroll 33⅓%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable, Hammers' ..... 20@20&5%
Adjustable, Steers' 30%
Cabinet, Sargent's ..... 45&10@50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers', Sargent's ..... 50&10@50&10&5%
Besw, Parallel ..... 33⅓&10%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Walk—

Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros. 30%
New Haven Edge Tool Co.'s 40%
Nichols Bros., Flat Bdl., 30%; Rd. Bdl., 40%
Fayette R. Plumb 5%
P., S. & W ..... 33⅓&5@33⅓&10%
L. & I. J. White 25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet ..... ₱ doz $7.20
Mascotte Toilet ..... ₱ doz. $8.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips, Axle—

Eagle and Superior 1/4 and 5-16 inch ..... 70@10@75%
Norway, 1/4 and 5-16 inch ... 70@70@5%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.). ..... 70@70@5%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather, Pope & Stevens' list 40%

Compasses, Dividers, &c.

Ordinary Goods ..... 70@10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 70%
Calipers, Inside or Outside 70%
Calipers, Wing 60%
Compasses ..... 50&5%
J. Stevens A. & T. Co ..... 25&10%

Coolers, Water—

S. S. & Co.: 2-gal., $15.40; 3-gal., $17.60; 4-gal., $19.85; 6-gal., $25.50.

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab ..... lb. 21@23c
Braided, White, Common, lb. ..... 15@17c
Cable Laid Italian, lb A, 18c; B, 16c
Common India ..... lb, 8 @5½c
Cotton Sash Cord, Twisted ... 10@15c
Patent Russia ..... lb 12 @13c
Cable Laid Russia ..... lb. 13½@14c
India Hemp, Braided ..... lb. 14@15c
India Hemp ..... lb 9@10c
Patent India ..... lb 10 c
Pearl Braided, cotton ..... ₱ lb 16¢
Massachusetts, White ..... ₱ lb 20¢
Massachusetts, Drab ..... ₱ lb 24¢
Eddy tone Braided Cotton ..... ₱ lb 18¢
Harmony Cable Laid Italian ..... ₱ lb 18¢
Ossawan Mills:
Crown, Solid Braided White ... ₱ lb 17¢
Braided, Giant, White ..... ₱ lb 16¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 13¢
Cable Laid India ..... 11¢
Braided India ..... 18¢
Phœnix, White ..... 17¢
Samson:
Braided, Drab Cotton ..... ₱ lb 31¢
Braided, Italian Hemp ..... ₱ lb 31¢
Braided, Linen ..... ₱ lb 41¢
Braided, White Cotton, Spot ... ₱ lb 27¢
Silver Lake:
A quality, Drab, 40¢ ..... 15&10%
A quality, White, 35¢ ..... 15&10%
B quality, Drab, 35¢ ..... 15&1 %
B quality, White, 30¢ ..... 15& 0%
Italian Hemp, 40¢ ..... 15&10%
Linen, 57½¢ ..... 15&10%

Wire, Picture—

Braided or Twisted ..... 70@75%

Corn Knives and Cutters—See *Knives, Corn.*

Crackers, Nut—

Acme, Japanned, ₱ gr. $30 ..... 40%
Acme, Nickel Plated, ₱ gr. $30 ..... 20%
Turner & Seymour Mfg. Co 50%

Cradles—

Grain 55%

Crayons—

White Round Crayons, gross ... 5@6c
Cases, 100 gro., $4.50 @$5 00, at factory.
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ..... ₱ doz. $10.00

Cutters— Meat—

American 30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Cumberland:

No.	0	1	8	10	12
Each	$1 75	2.25	3.00	3.00	3.50

Enterprise ..... 25@25&7½%

Nos	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz 33⅓%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₱ doz 70%

Nos	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ₱ doz. $26.00 ..... 60%
Little Giant, ₱ doz ..... 50&10%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$71.00	$68.00

Miles' Challenge, ₱ doz ..... 45@45&10%

Nos	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00 ... 33⅓&5%
Woodruff's, ₱ doz 33⅓%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Henry Dies on & Son:
Slaw, Cabbage Grater, &c. 40%
Kraut Cutter 24 x 7, 26 x 8, 30 x 9, 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 10%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 50@50&10%
Slaw Cutters, 1 Knife, ₱ gr. ... $15@$18
Slaw Cutters, 2 Knife, ₱ gr. ... $20@$27

Tobacco—

All Iron, Cheap ..... doz. $4.50@$5 00
Enterprise ..... 25@30%
National, ₱ doz. $21.00 ..... 40%
Sargent's, ₱ doz. $24.00 ..... 60@60&10%

Washer—

Appleton's, ₱ doz. $16.00 ..... 60&10@60&10&10%
Bonney's ..... ₱ doz. $4.75

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger ... 40%
Iwan's Perfection Post Hole Digger ... ₱ doz. $10.00
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill ... each $1.50@$1.60
Blacksmiths' Self-feeding ..... each $5.00@$6.00
Bench Drills, Stearns' ..... 50@50&10%
Breast, Millers Falls, each $3.00 ..... 25%
Breast, P., S. & W ..... 40&10%
Goodell Automatic Drills .. 40&5@40&10%
Ratchet, Bignall & Keeler ..... 30&5%
Ratchet, Curtis & Curtis 25%
Ratchet, Ingersoll's 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's ..... 20&10%
Whitney's Hand Drill, No. 1, $10.00 ... Adjustable, No. 10, $12.00 ..... 33⅓%

Twist Drills—

Standard List ..... 60@10&10@70@5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Baisey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9.. 40%
Buck Bros. 30%
Buck Bros' Screw Driver Bits 27½%
Champion ..... 40&10%
Dean's Flat Blade, Elec ric, &c. ... 50%
Douglass Mfg. Co. ..... 20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
New England Specialty Co. ..... 50&10%
New York, Manhattan and Handy ... 20%
Sargent & Co.'s:
Nos. 1, 20, 40 and 60 ..... 50&10&50&10&5%
Nos. 50 and 55 ..... 50&10&10@60&5%
Screw Driver Bits ..... ₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 70&10%
No. 86 ..... 75&10%

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 54 to Flour, CF:*

	46 gro.	180 gro.	F.F.F.
Kegs ..... lb.	4½c	5 c	3 c
½ Kegs .... lb.	4¾c	5¼c	3½c
¼ Kegs .... lb.	5 c	5½c	3½c
10-lb cans, 10 in case	6 c	6½c	5½c
10-lb. cans, less than 10	10 c	10 c	8c

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ..... 50&10%

Faucets—

Cork Lined ..... 70@5@70@10@5%
Metallic Key, Leather Lined ..... 65@10@70%
Red Cedar ..... 50@50@10%
B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined ... 50%
John Sommer's Reliable Cork Lined. John Sommer's Common Cork Lined. 70%
John Sommer's Chicago Cork Lined . 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar ... 40%
Star ..... 60@60&5%
Star, Metal Plug, new list ..... 40@40&5%
Lockport, Metal Plug, reduced list. 60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40%
Lane's, ₱ doz. $36.00 ..... 33⅓%
National Measuring, ₱ doz. $36.00 ... 40%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised June 1, 1899.
Best Brands ..... 70@70&10%
Good Brands ..... 75@75&10%
Fair Brands ..... 75&10@80%
Second Quality .... 80&10@80&10&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 ..... 35%

Fixtures, Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$3.50	3 50	3.75	4.50	5 00

Stowell's Grant Grind ton Hanger ... ₱ doz. $6.00@7.00
Stowell's Grindstone Fixtures ... 35&10%
P., S. & W. Co. ..... 50&10&10%
Reading Hardware Co. ..... 30&20&10%
Sargent's Patent ..... 70&10@70&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Aug 1, 1899, list.
Hay, 2 tine 65%
Hay, 3 tine 66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine 70%
Spading ..... 70@5%
Victor, Hay 70%
Victor, Manure ..... 70&8%
Victor, Header ..... 70&2%
Champion, Hay ..... 60&20%
Champion, Manure ..... 70&5%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading ..... 70&10%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6 00.
Plated.—See *Spoons.*

Frames—

Saw—

Red, Polished and Varnished .. doz. $1 00@$1 10
White ..... doz. 70@75c

Screens, Window and Door—

Bonanza Window Screens ..... 60@60&5%
Phillips' Window Screen Frames .. 60&5%
Porter's Extension Window Screens ... 60&5%
Wabash Spring Adj. Screen 50%
Warner's Screen Corner Irons, Nos. 0B&00B 50%

Freezers, Ice Cream—

Qts...	2	3	4	6	8	10
Best	$1.40	1 60	1.85	2 50	3.00	3.90
Good	$1 25	1 35	1.70	2 05	2 65	3.50
Fair	$1.00	1.10	1 30	1 75	2.30	2.90

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.
Hemp Fuse	$2.60
Cotton Fuse	2.90
Single Taped Fuse	3.50
Double Taped Fuse	4.70
Triple Taped Fuse	5.70

} 10%

Gates, Molasses and Oil—

Stebbin's ..... 80@20@85%

Gauges—

Marking, Mortise, &c. ..... 60@10 @60@10@10%
Barrett's Comb. Roller Gauge ... ₱ doz. $6.75@7.35
Stanley R. & L. Co.'s Butt & Rabbet Gauge ..... 25&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—

Nail, Metal, Assorted, gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro $4.00@4.50
Spike, Wood Handled, Assorted gro. $5.00@5.25

Glass, American Window

List Jan. 1, 1898.

Small lots from store:
Eastern ....80&20%
Western ....80&20@85&5%
From Factory, with Frt. Allowance:
Carloads ....80&15%
1000 boxes or more, Gulf Ports ....85&10%
3000 boxes or more ....80&20%
5000 boxes or more 85%

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.) .... 35½@48%
List C, Cans (½ gal., gal.) ....25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Allerton's Axle:
1 lb Tins, ₩ gr. $9.00
8 lb Tin Pails, ₩ doz., $2.00; 5 lb, $3.00; 10 lb, $5.00.
25 lb wood pails ....₩ doz. $12.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs. ₩ doz. 1 lb $1.20; 2 lb $2.00
Lower grades, special brands, ₩ gr. $5.00@6.50

Grindstone Fixtures—

See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

gro.
Peg Patent, Leather Top ..$4.90@5.25
Peg Patent, Plain Top ....$3 50@3 75
Sewing, Brass Ferrule ....$1 50@1 60
Saddlers', Brass Ferrule ..$1 35@1 45
Peg, Common ....$1.25@1 35
Brad, Common ....$1.35@1.50

Halters and Ties—

Covert Mfg. Co., Web.. ....45&2%
Covert Mfg. Co., Jute Rope....45&2%
Covert Mfg. Co., Sisal Rope....35&2%
Covert's Saddlery Works', 96 list....70%

Hammers—

Handled Hammers—

Heller's Machinists' ....40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ....40&10%
Peck, Stow & Wilcox ....40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail..33½&7½%
Engineers' and B. S. Hand....50&10%
Machinists' Hammers.. ....50&10%
A. E. & A. E., Bell Face Nail...33½&7½%
Sargent's C. S. New List....45&50%

Heavy Hammers and Sledges—

3 lb. and under...lb. 45c
3 to 5 lb ....lb. 36c } 75&5@75 &10&5%
Over 5 lb....lb. 30c
Note.—Lower net prices sometimes made by jobbers.
Wilkinson's Smiths' ....9½c@10c lb.

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Agricultural Tool Handles—

Hoe, Rake, Fork, &c ....60@60&5%
Shovel, &c., Wood D Handle 60%

Cross-Cut Saw Handles—

Atkins' 40%
Champion ....45@45&10%
Disston's 50%

Mechanics' Tool Handles—

Auger, assorted ....*gro* $2 25@$2 50
Auger, large ....*gro.* $2 75@$3 00
Brad Awl ....*gro.* $1.40@$1.50
Chisel Handles:
Apple Firmer, gro ass'd. $2.25@$2 50; *large,* $2.75@$3.00.
Hickory Firmer, gro ass'd, $2.25@$2.50; *large,* $2 50@$2.75.
Socket, gro ass'd, Firmer, $1.50@$1.60; *Framing,* $2 50@$2 75.
File, assorted ....*gro.* $1 00@$1 15
Hammer, Hatchet, Axe, &c ...50&10%
Hoe, Rake and Fork ....60&10@60&10&5%
Shovel and Spade, Wood D Handle ....60&1%
Hand Saw, Varnished, doz. 75@80c
Not Varnished ....55@60c
Plane Handles:
Jack, doz. 23@25c; *Jack Bolted* ..55@60c
Fore, doz. 35@38c; *Fore, Bolted* ..70@75c

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$1.28	1.68	2.16	2.64	3.30

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$2.86	3.74	4.84	6.16

Bigelow & Dowse Co.:
Paragon, No. 1, $3.50; No. 2, $4.50; No. 3, $5.50 ₩ doz.
Chicago Spring Butt Co.:
Friction ....35@35&10%
Oscillating ....35@35&10%
Big Twin ....35@35&10%
Chisholm & Moore Mfg. Co.:
Advance 55%
Cleveland 60%
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Lane Bros.:
Parlor, Standard ....40&5&2½%
Parlor, New Model ....40&5&2½%
Barn Door, Standard ....60&5&2½%
Covered ....50&10&10%
Special ....60&5%
Lawrence Bros.:
Crown ....60&10%
New York ....60&10@60&10&5%
Sterling ....60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18 ....60&10%
No. 1, Special, $13 ....60&10%
Stowell Mfg. and Foundry Co.:
Badger ....60&10%
Baggage Car Door ....33⅓&5%
Climax Anti-Friction ....55&5%
Elevator 40%
Interstate 60%
Magic 50%
Matchless ....50&10%
Nansen ....50&10%
Parlor Door 50%
Railroad ....55&5%
Street Car Door ....50&10%
Steel, Nos. 300, 400, 500 ....45&15%
Wild West ....50&5%
Zenith for Wood Track ....55&5%
Taylor & Boggs Foundry Co.:
Midder's ....50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless ....33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless 60%
Bike Roller Bearing ....60&10&10%
Bike Steel Endless ....60&10&10%
C. J. Roller Bearing ....60&10&10%
Cycle Ball Bearing ....60&10%
Dye Steel ....60&10%
Economical Single Track ....50&10&5%
L. T. Roller Bearing 70%
New Era ....50&10%
New Richards 60%
O. K. Roller Bearing 70%
Prindle Improved ....60&10%
Richards' Improved ....60&10%
Richards' Single Track ....50&10%
Wilcox Dwarf Roller Bearing ....40&10%
Wilcox-Ives ....60&10%
Wilcox Tandem Roller Bearing ....60&10%
Wilcox Trolley Ball Bearing ....40&10%
Wilcox Trolley Roller Bearing 50%
Wilcox Trolley Roller Bearing, Fire ....40&10%
Wood Track 60%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp, ₩ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands ....40&12½@50&5%
Cheaper Brands ....50&10@60&5%
Note.—Net prices often made.

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Lull & Porter:

No	1	1½	2	2½
Doz. pair	$0 68	.63	.59	.53

1868 Old Pattern:

No	1	3	5
Doz. pair	$0.74	1.33	2.67

Parker ....75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ....10%
Reading's Gravity ....75&10%
Sargent's, Nos. 1, 3, 5, 11, 13..75@75&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter 75%
Buffalo Gravity Locking, Nos. 1, 3 and 5 ....75%
Champion Gravity Locking, No. 75 ....80%
1868, Old Pat'n, Nos. 1, 3 & 5...75&10%
Tip Pattern, Nos. 1, 3 and 5....75&10%
Double Locking, Nos. 20 and 25..70&10%
Empire, Nos. 101 and 103 ....70%
Niagara Gravity Locking, Nos. 1, 3 and 5 ....75&15&5%
Noiseless, Nos. 50, 60, 65 and 55..75&5%
O. S. Lull & Porter ....75&5%
Pioneer, Nos. 060, 45 and 5½ ....75&5%
Steamboat Gravity Locking, No. 10.. 80%
Stanley's Steel Gravity Blind Hinges, ₩ doz. sets $1.20 ....20&10%

Spring Hinges—

Holdback, Cast Iron ....*gro.* $6.50@6.75
Non-Holdback, Cast Iron ....*gro.* $5.50@$5.75

J. Bardsley:
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer's 40%
Chicago Spring Butt Co.:
Chicago 25%
Garden City Engine House.. ....25%
Keene's Saloon Door 25%
Lawson Mfg. Co.:
Machiness 25%
Matchless Pivot 40%
Payson Mfg. Co.:
Oblique, Dbl. Acting ....50@50&5%
Stower Mfg. Co.:
Ideal, No. 16, Detachable, ₩ gr. ....$ 2.50
Ideal, No. 4 ....₩ gr. $9.00
New Idea No. 1 ....₩ gr. $9.00
New Idea, Double Acting 45%
Van Wagoner & Williams Hdw. Co.:
Acme ....30&5%
American 30%
Columbia, No. 14 ....₩ gr. $8.00
Columbia, No. 18 ....₩ gr. $24.00
Crown 30%
Gem 30%
Knoxall ....₩ gr. $9.00
Oxford 30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges ..60%
Heavy Strap Hinges ..70%
Light T Hinges ....50&10%
Heavy T Hinges ...60&10%
Extra Heavy T Hinges ..66⅔% } Extra 20%@25%
Stanley's Corrugated Heavy Strap 70%
Stanley's Cor. Ex. Heavy T. 66⅔%

NOTE.—*Change in base discounts.*
Rolled Plate ....70@70&10%
Screw Hook and Strap. { *6 to 12 in..lb* 3½@3½c; *14 to 20 in..lb.* 3 @3½c; *22 to 36 in..lb.* 2.75@3 c

Hoes—

Eye—

Scovil and Oval Pattern..60@60&10%
Grub, list Feb. 23, 1899 ....65@65&10%
D. & H. Scovil ....35@35&5%

Handled—

Aug. 1, 1899, List:
Field and Garden ....75&2%
Ladies', Boys', Toy and Onion ....70&10&10%
Street and Mortar ....75&7½&2%
Cotton ....70&10&10&5&2%
Planters' ....70&30%
Weeding 75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe ....75&2%
Ft. Madison Crescent Cultivator Hoe, per doz ....75&10&2%
Ft. Madison Mattock Hoe, ₩ doz $1.50
Ft. Madison Sprouting Hoe, ₩ doz..$4.80
Ft. Madison Dixie Tobacco Hoe ....75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe ....%

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders—

Bit—

Angular, ₩ doz. $24.00 ....45&10%

File and Tool—

Nicholson File Holders and File Handles 33⅓%

Hooks—

Cast Iron—

Bird Cage, Reading ....
Bird Cage, Sargent's List... } ...66⅔@70%
Clothes Line, Sargent's List...50@50&5%
Ceiling, Sargent's List ....50@50&5%
Clothes Line, Stowell's ....70&5%
Clothes Line, Reading List ....65&10@65&10&10%
Coat and Hat, Stowell's ....70&5%
Coat and Hat, Reading ....70@75%
Coat and Hat, Sargent's List....50&10%
Coat and Hat, Wrightsville ....65&10%
Harness, Reading List ....70&10@75%

Wire—

Belt ....80&10@80&20%
Atlas, Coat and Hat ....50@50&10%
Wire Coat and Hat:
Acme ....60@60&5%
B. B ....70@70&5%
Gem 66⅔%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, or Case, Octagon Steel ....*doz.* $2.00@2.15
Cotton ....*doz.* $1.00@1 10
Picture, T. & S. Mfg. Co 75%
Tassel, T. & S. Mfg. Co ....50&10%
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; *Medium,* $6 00; *Heavy,* $6 50
Grass ....*Nos* 1 2 3 4
Best $1.60 1.75 2 00
Common $1.50 1.50 1.50 1.75
Potato and Manure ....75&15%
Whiffletree ....*lb.* 4¾c
Hooks and Eyes:
Brass ....70&10@75%
Malleable Iron ....75&10%

Covert Saddlery Works' Self Locking Gate and Door Hook, 4 in. ₩ gross $13.00; 6 in. $17.20 ....70%
Crown Picture ....50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition ....*ft.* 4¾@ 5½c
3-ply Standard ....*ft.* 5½@ 6 c
4-ply Standard ....*ft.* 6½@ 6¾c
3-ply extra ....*ft.* 6½@ 7½c
4-ply extra ....*ft.* 7½@ 8½c
High Grade ....*ft* 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade ....*ft.* 5½@6c
Fair quality ....*ft.* 7 c
Good quality ....*ft.* 8 @ 8½c

Irons—Sad—

From 4 to 10 ....*lb* 2½@2¾c
B B. Sad Irons ....*lb.* 2¾c
Chinese Laundry ....*lb.* 4¼@4½c
Chinese Sad ....*lb.* 3½@3¾c
Mrs Potts', per set:

Nos	50	55	60	65
	85@$1.00	78@93c	95@1.10	89@1.03

New England Pressing..lb.. 3¼@3½c

Soldering—

Soldering Coppers ....*lb.* 23@26c
Covert Mfg. Co ....30&2%

Pinking—

Pinking Irons ....*doz.* 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel ....45&2%
Daisy, ₩ doz. $12.00 ....70%
Lockport ....40@40&10%
Victor, ₩ doz. $20.00 ....70%
Lane's Steel 33⅓%

Kettles—

Brass, Spun, Plain, list Jan. 10, '99 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives 40%
Foster Bros.' Butcher, &c 80%
Nichols' Butcher Knives 50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₩ doz $3.25

Drawing—

Standard List ....75&5@75&10%
Adjustable Handle ....25@33⅓%
Bradley's 35%
Swan's ....75@75&5&2½%
Watrous ....30&10@40%
L. & I. J. White ....20&5@25%
Cautelo's Folding ....50@50&5%

Hay and Straw—

Blizzard, from Jobbers ....$5.75@6.00
Iwan's Sickle Edge ....₩ doz. $11.50
Lightning, from Jobbers ....$6.50@7.00

Mincing—

Buffalo ....₩ gro. $15.00
Smith's, ₩ doz., Single, $2; Double, $3 45&50%

Miscellaneous—

Farriers' ....*doz* $2 00@3 00
Wostenholme's ....₩ doz. $3.00@3 25

Knobs—

Base, 2¼-inch, Birch, Rubber tip, gro ....$1.20@1.25
Carriage, Jap. all sizes..gro. 27@30c
Door, Mineral ....*doz.* 62@65c
Door, Por. Jap d ....*doz.* 75@78c
Door, Por. Nickel ....*doz* $1 70@1.80
Bardsley's Wood Door, Shutter, &c ...15%
Picture, Sargent's ....70&10%
Snow's Victor ....50&10%

Ladies—Melting—

L. & G. Mfg. Co 60%
P., S. & W ....35&10@40%
Reading ....50&10%
Sargent's ....60@60&10%

Lanterns—Tubular—

Regular Tubular ....*doz.* $4.00@4.25
Side Lift Tubular ....*doz.* $4 25@4.50
Square Lift Tubular ..*doz.* $4.21@4 50
Other Styles ....40¢10@40¢10¢5%
Meyrose Side Lift Tubular, doz. $8.50... 50&10&5%

Bull's Eye Police—

2¾-inch flash light ....*doz* $3.50@3.75
3-inch flash light ....*doz.* $4.00@4 25
2¾-inch regular ....*doz.* $3.25@3.50
3-inch regular ....*doz.* $3.50@3.75

Latches, Thumb—

Roggin's Latches ....*doz.* 25c@30c

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small ....*doz.* 45c; *large,* 50c
Covert Mfg. Co ....45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
9 x 4 it. x ¼ ..... ₩ 100 $10.00
Other sizes, Iron ..... 70&10&10%
Other sizes, Brass ..... 70&10%
Excelsior ..... 60@60&10%
Payson's:
Solid Grip Nos. 303 and 304, ₩ 100, $11.00
Other sizes ..... 70&10%

Lines—

Wire Clothes, Nos... 18 19 20
100 feet $2.50 2 25 2 00
75 feet $1.50
Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $5.50; No. 2, $7.00; No. 3, $7.50 ₩ gr. 30%

Locks, &c.— Cabinet—

Cabinet Locks ..... 35⅓@33⅓&7⅓%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]
Reading Hardware Co. 40%
K. & E. Mfg. Co. ..... 45& 0%
Sargent & Co. ..... 40@40&10%
Slaymaker-Barry Co. ..... 30@35%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron, list Dec. 5, '97 ..... 70&5@70&10&5%
Dog Collar, S. B. Co. 40%
K. & K. Mfg. Co. Wrt. Steel and Brass. 50%
S. B. & Co. 40%

Sash, &c.—

Bloch's Patent ..... 65&10%
Coes' Patent ..... 62½&10@66⅔&10%
Payson's Perfect 70%
Payson's Signal (new list) ..... 75&10%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Douglas	$2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Fluting—

Crown Jewel, 6 in. ..... $2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 30%

Washing—

Wayne American, ₩ doz. $27.00
Western Star, No. 2, ₩ doz. 28.00
Western Star, No. 3, ₩ doz. 30.00
St. Louis, No. 41, ₩ doz. 60.00
Carload lots 10% off, freight allowed.

Mallets—

Hickory ..... 50@50&10%
Lignumvitæ ..... 50@50&10%
Planners', Hickory and Applewood, doz ..... 50@55c
Silver Head Stearns' ..... 35&10%

Mattocks—

List Feb. 23, 1899 ..... 65@65&10%

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, list Jan. 1, '88 ..... 60&10@60&10&10%

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co., list Jan. 17, '93..30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 60&10%
Parker's Upright ..... 30&10@40%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

	10	12	14	16-inch
Cheap				$1.60@$1.75
Good	3.00	3.25	3.50	3.75
High Grade	4.00	4.25	4.50	4.75

Pennsylvania and Continental ... 60&10%
Philadelphia:
All Styles except A and E. ..... 70&10%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10%
Racine ..... 60&10&10%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899. .....
80&10@80&10&5%
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&10&5%
American	9½	9½	9½	9½	9½	net
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton Fin.	19¢	17¢	16¢	15¢	14¢	30&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Neponset	23¢	21¢	20¢	19¢	18¢	40%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Standard	23¢	21¢	20¢	19¢	18¢	40&10%
Star	23¢	21¢	20¢	19¢	18¢	35& 5%
Vulcan	23¢	21¢	20¢	19¢	18¢	33⅓& 5%

Picture—

	1½	2	2½	3	3½ in.
Brass Head	.90	.95	1.00	1.05	1.10 gro.
Por. Head	.85	.90	.95	1.10	1.15 gro.

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.
Cold Punched. Mfrs. or U. S. Standard. Off list.
Hexagon, plain ..... 4.30@4.50c
Square, plain ..... 4.30@4.50c
Square, C. T. & R. ..... 4.10@4.30c
Hexagon, C. T. & R. ..... 4.60@4.80c
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd. Square ..... 4.40@4.60c
Hexagon ..... 4.60@4.80c

NOTE.—*Tapped Nuts are now 2-10c. higher than above.*

Oakum—

Best or Government ..... lb. 5¾c
Navy ..... lb. 4¾c
U. S. Navy ..... lb. 5¼c
Plumbers' Spun Navy 5¾c
In carload lots ¼c lb. off f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... 60&10@60%
Tin or Steel ..... 70@70&10&5%
Zinc ..... 70@70&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co. ..... 70@70&10%

Openers, Can—

French ..... doz. 35c
Iron Handle ..... doz. 60@75c
Sprague, Iron Hdle..per doz. 40@45c
National, ₩ gro. ..... $1.75@$2.00
Sardine Scissors ..... ₩ doz. $2.00@$2.10
Stowell's ..... 70&10%

Packing—

Rubber—

Standard, fair quality ..... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₩ ℔ 80¢ ... 25@25&5%

Miscellaneous—

American Packing ..... 9@10c lb.
Cotton Packing ..... 13@14c lb.
Italian Packing ..... 10½@11¼c lb.
Jute ..... 6@8¼c lb.
Russia Packing ..... 12@13c lb.

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $7.00 ₩ doz. .....

Galvanized—

Inch	10	12	14
Water, Standard, gro	$25.00	$26.00	$29.00
Water, Competition, gro	20.00	22.00	24.00
Fire, Rd. Bottom, gro	28.00	31.00	33.00
Well, gro	29 00	31 00	34.00

Note.—See Trade Report.

Pans—

Dripping—

Large Sizes ..... lb. 4¾c
Small Sizes ..... lb. 5¼c

Fry—

Standard List ..... 80@80&10%

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5, $4 25; 10, $4.75; 20 $5.25; 30, $5.75
Simplex, ₩ doz., No. 40, $29.50; 50, $33.00; 60, $36 00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	500 sq. ft.
Light wt., 20 sq. ft. to lb	$0 40@0.45
Medium wt., 12 sq. ft. to lb	$0.60@0.65
Heavy wt., extra quality	$0.95@1.05
Medium Grades Water Proof Sheathing	$0 80@1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	$45.00@50.00

York Haven Waterproof Sheathing... $1 35@1.75

Tarred Paper.

1 ply (roll 800 sq ft), ton ..$35 00@40.00
2 ply, roll 100 sq. ft 90c
3 ply, roll 100 sq. ft $1.20

Sand and Emery—

List April 19, 1898...50&5@50&10&5%

Parers—

Apple—

Advance ..... ₩ doz.	$4.50
Baldwin ..... ₩ doz.	$5.00
Bonanza ..... each	$5.00
Dandy ..... each	$7.50
Eureka, 1898 ..... each	$16.00
Family Bay State ..... ₩ doz.	$12.00
Hudson's Ri ht Star ..... ₩ doz.	$4.00
Hudson's Ro king Table ..... ₩ doz	$5.50
Improved Bay State ₩ doz.	$27.00@30.00
New Lightning ..... ₩ doz.	$5.50
Reading 72 ..... ₩ doz.	$4.00
Reading 78 ..... ₩ doz.	$7.00
Turn Table ..... ₩ doz.	$4.50
Turn Table '98 ..... ₩ doz.	$5 50
White Mountain ..... ₩ doz.	$4.00

Potato—

Saratoga ..... ₩ doz.	$5.50
White Mountain ..... ₩ doz.	$4.50

Picks and Mattocks—

List Feb 23, 1899 ..... 65@65&10%

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... 60@60&5%
Iron, list Nov. 11, '85 ..... 60@60&5%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in. 60%
Extra Heavy, 2-6 in. 65%
Fittings ..... 60&10&10@70%

Pipe, Wrought Iron—

Factory Shipments.

List February, 1899.
Plain and Galvanized:
Carload lots ..... 50@50&10&10%
Less than carload lots ..... 50@50&10%
Screw and Socket Casing ..... 40&5%
Inserted Joint Casing ..... 35&5%
Cold Drawn Seamless Steel Tubing .. 60%

Planes and Plane Irons—

Wood Planes—

Molding ..... 40&2½@40&5%
Bench, First quality ..... 45&10@45&10&5%
Bench, Second quality ..... 50&10@50&10&5%
Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10&10@25&10&10&10%
Sargent's ..... 60&10&10@70%

Plane Irons—

Wood Bench Plane Irons ..... 50&5@50&10%
Buck Bros. 30%
Butcher's ..... $5.00@$5.25 to £
Stanley R. & L. Co... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

Plates—

Felloe ..... lb. 5½@5¾c
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 50%

Pliers and Nippers—

	Gas.... 7	8	9	10-in.
Best		$5.25	$6.00	$6 50 doz.
Good	$2.50	2.75	3.00	3.50 doz.

Acme Nippers 50%
Bernard's:
Parallel Pliers, &c 33⅓%
Paragon Pl ers 50%
Lodi Pliers 50%
Elm City Fence Pliers 33⅓%
Button's ..... 65&10%
Heller's Farriers' Pincers and Tools ..... 40@40&5%
Morrill's Parallel, ₩ doz. $12.00 ... 30&5%
P., S. & W. Cast Steel ..... 50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6% 10%
Utica Drop Forge & Tool Co.:
Combination Pliers ..... 40&5%
Side Cutting Pliers ..... 40&5%
Hall Patent Nipper ..... 40&5%
Round and Flat Nose Pliers ..... 40&5%
End Cutting Pliers ..... 40&5%
Royal Blue ..... 40&5%
Glass Pliers ..... 40&5%
Burner Pliers ..... 40&5%

Plumbs and Levels—

Plumbs and Levels ..... 70&10&10@75&10&10%
Disston's 70%
Pocket Levels ..... 70&10&10@75&10%
Stanley R. & L. Co. ..... 70&10&10@70&10&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz., No. 1, $4.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00 ..... 50%

Points, Claziers'—

Bulk and 1 lb. papers.. lb. 10½@11½c
½-lb. papers ..... *lb.* 11 @12 c
¼-lb. papers ..... *lb.* 11½@12½c

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.00
Ft. Madison, Western ..... ₩ doz. $3.50

Police Goods—

Manufacturers' Lists ..... 25@25&10%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.75 ..... 40%
Prestoline Paste ..... 33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ ℔ boxes, ₩ doz. $1.25; 1 ℔ boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz. $1.50

Stove—

Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ ℔ 8¢
Fireside ..... ₩ gr. $2.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.50
Jet Black ..... ₩ gr. $3.50
Wynn's Black Silk, 5 ℔ pail ..... ₩ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₩ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₩ doz. 0.75
Wynn's Black Silk, 8 oz. liq., ₩ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro.* $7.00@$8.00
1½ qt ..... *gro.* 9 00@ 10.00
2 qt ..... *gro.* 10.50@ 11.50
Quincy Corn Popper, 1 qt., ₩ gr. $18.00; 2 qt., $24.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... 40&10@80%
Tinned ..... 40&5@45%

Powder—

In Canisters:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6¼-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6¼-lb. kegs $2.25
Rifle, 12½-lb. kegs $4.25
Rifle, 25-lb. kegs $8.00
King's Smokeless:
Keg (25 ℔ bulk) $20 00
Half Keg (12½ ℔ bulk) $10.25
Quarter Keg (6¼ ℔ bulk) $5.25
Canister (1 ℔ bulk) $0.90
Case, 1 ℔ Canisters (50 ℔ bulk) $45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk) $22.75
King's Semi-Smokeless:
Keg (25 ℔ bulk) $16.00
Half Keg (12½ ℔ bulk) $8.25
Quarter Keg (6¼ ℔ bulk) $4.75
One Pound Can, bulk $0.50

Smokeless 30&10&5%
Semi-Smokeless 30&10&5%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₩ doz. $18.00 ..... 50%
Crown Prince, ₩ doz. $15.00 ..... 50%
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
National, ₩ doz. $24.00 ..... 50%
Pelican, ₩ doz. $9.00 ..... 15&10%
Scranton No. 1 and 2, ₩ doz. $9.00
Scranton, No. 3, ₩ doz. $8.50

Pulleys—

Hay Fork, Swivel or Solid Eye ..... doz. $1.60@2.00

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00 ..... 40%
Hot House, Awning, &c. ..... 60@40&10%
Japanned Clothes Line ..... 60@60&10%
Japanned Screw ..... 70&10&10%
Japanned Side ..... 70&10&10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction .. 60&10%
Stowell's Electric Light 50%
Stowell's Side, Anti-Friction 60%
Sash (Auger Mortise):
Common Sense, 1¼ in., ₱ doz., 18¢; 9 in., 20¢.
Empire ..... 1¼ in., 17¢; 2 in., 19¢
I. C. ..... 1¼ in., 15¢; 2 in., 17¢
Ideal No. 13 ..... 1¼ in., ₱ doz., 18¢
Improved ..... 1¼ in., 17¢; 2 in., 19¢
Niagara ..... 1¼ in., 16¢; 2 in., 19¢
No. 26, Troy ..... 1¼ in., 15¢; 2 in., 19¢
Star ..... 1¼ in., 16¢; 2 in., 19¢
Acme ..... 1¼ in., 18¢; 2 in., 20¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern ..... 60@60&5%
Pitcher Spout 75%
Pump Leathers, all sizes ....gro. $6.00
Flint & Walling's Fast Mail ..... 50@55%
Flint & Wal ing's Pitcher Spout 75%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co 20%

Punches—

Revolving (4 tubes)...doz. $3.50@3.75
Saddlers' or Drive, good..doz. 60@65c
Spring, good quality ..... $1.70@1 80

Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co.'s Check 55%
Bemis & Call Co.'s Spring ..... 50&5%
Bemis & Call Co.'s Springfield Socket.. 65%
Niagara Hollow Punches 45%
Niagara Solid Punches 55%
Spring, Leach's Pat 15%
Steel Screw, B. & K. Mfg. Co 50%
Tinners' Hollow, P., S. & W. Co....20&2%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44 ..... 55%

Rail—

Barn Door, &c.—

Barn Door, Light..In.	½	⅝	¾
100 feet	*$1.50*	*$1.95*	*$2.60*

B. D., for N. E. Hangers:

	Small.	*Med.*	*Large.*
100 feet	*$1.60*	*2.00*	*2.50*

Sliding Door, Bronzed Wr't Iron, ft. 6¼c
Sliding Door, Iron Painted..2¼@2½c
Sliding Door, Wrought Brass, 1½ in. .. .. lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot ..... 3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch... $3.00
Lanes' Standard, ₱ 100 ft. 4.25
McKinney's None Better ..... ₱ ft. 2¾¢
McKinney's Standard ..... ₱ ft. 3¼¢
Moore's, Wr't. Bracket, Steel ..... 3¼¢
Stowell's Steel Rail ..... 35&10%
Terry's Steel Rail ..... ₱ ft. 3¼¢

Rakes—

Aug 1, 1899, List:
Cast Steel ..... 70&5&2%
Malleable 66⅔%
Fort Madison Red Head Lawn $3.25
Fort Madison Blue Head Lawn $3.00

Rasps, Horse—

Disston's 75%
Heller Bros. ..... 60&10& 0%
New Nicholson Horse Rasp ..... 70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popular and Salmon, Single Action, Multiplying and Quadruple, all sizes 25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor. 50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN ..... 40&10%

Registers—

For points on Mississippi River and East:
Black Japanned 50%
White Japanned 25%
Bronzed Finishes 30%
Nickel Plated ..... 30&10%
Electro Plated in Brass, &c..30&10%
White Porcelain 20%
Solid Brass and Bronze Metal.. 20%
Note—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

	⅞	1⅛	3 Inch
Steel	*$0.90*	*1.00*	*1.05 dos.*
Copper	*1.10*	*1.20*	*1.35 dos.*

Hog Rings and Ringers—

Hill's Rings...gro. boxes, $3.75@4.00
Hill's Ringers, G. I. .....doz. 50@55c
Blair's Rings ..... ₱ gro. $4.25@4.50
Blair's Ringers ..... ₱ doz. 55¢@60¢
Brown's Rings ..... ₱ gro. $4.25@4.50
Brown's Ringers ..... ₱ doz. 55¢@60¢
Perfect Rings ..... ₱ gro. $7.25@7.75
Perfect Ringers, ₱ doz. ..... 75@80¢

Rivets and Burrs—

Copper ..... 40¢10@50%
Iron or Steel:
Tinners' ..... 55@55 &10%
Miscellaneous ..... 55@55 &10%
NOTE—*This price is often shaded by jobbers.*

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction ....50&10%
Barn Door, Sargent's list. 60&10&10@70%
Lane's, Stay ....33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.00

Rope—

Manila, 7-16 in. and larger. lb. .. @13 c
Manila.....⅜-inch lb. .. @13½c
Manila..¼ and 5-16 in. lb. .. @14 c
Manila, Tarred Rope, 15 thread ..... lb .. @13 c
Manila Hay Rope Med'm. lb .. @13 c
Sisal, 7-16 in. and larger, lb. .. @10 c
Sisal ....⅜-inch. lb... @10½c
Sisal.....¼ and 5-16 in. lb. .. @11 c
Sisal, Hay Rope, 2 to 10 ply ..... lb. .. @10 c
Sisal, Med'm Lath Yarn. lb. .. @ 9½c
Cotton Rope:
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com., ¼-in. and larger. lb. 8@10 c
Jute Rope ..... lb. .. @6 c

Wire Rope—

List July 1, '99 ..... 30¢2½%

Ropes, Hammock—

Covert Saddlery Works 70%

Rules—

Boxwood..75¢10¢10¢10@75¢10¢10 ¢10¢10¢10%
Ivory ...40¢10¢10@40¢10¢10¢10¢10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ... . 50&10%
Stanley R. & L. Co.;
Boxwood ..... 75&10&10@75&10&10&10&10%
Ivory ..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Note.—Extra 5@10% often given on Circulars, Cross Cuts, &c. and extra 5@7½ on Hand, Butcher, &c.

Atkins' Circular 50%
Atkins' Band 50%
Atkins' Cross Cuts 40%
Atkins' Mulay, Mill and Drag 50%
Atkins' One-Man Saw ..... 40&10%
Atkins' Wood Saws ..... 40&10%
Atkins' Hand, Compass, &c. 40%
Disston Circular Solid and Inserted Tooth 50%
Disston Band 2 to 14 in. wide 60%
Disston Band ¼ to 1¼ 70%
Disston Crosscuts 50%
Disston Narrow Crosscuts 55%
Disston Mulay, Mill and Drag 50%
Disston Framed Woodsaws 35%
Disston Wo dsaw Blades 40%
Disston Woodsaw Rods 25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Disston Hand Saws, Nos 7, 107, 10½, 8, 1, 0, 00, Combination 30%
Disston Compass, Keyhole, &c. 25%
Disston Butcher Saws and Blades 35%
C. E. Jennings & Co.'s ..... 25&5@30&5%
Peace Circular and Mill ..... 45&10%
Peace Cross Cuts, list Jan. 1, '99, 45&10&5%
Peace Hand, Panel and Rip ..... 25&10&5%
Richardson's Circular and Mill ..... 45&10%
Richardson's X Cuts, list Jan. 1, '98, 45&10&5%
Richardson's Hand, &c. ..... 25&10&5%
Simonds' Circular Saws 50%
Simonds' Crescent Ground Cross Cut Saws 35%
Simonds' One-Man Cross Cuts .... 40&10%
Simonds' Gang Mill, Mulay and Drag Saws ..... 45@45&5%

Hack Saws—

Disston Concave Blades 25%
Diss on Keystone 30%
Disston Hack Saw Frames 30%
Griffin's complete ..... 50@50&10%
Griffin's Hack Saw Blades ....50@50&1 %
Star Hack Saws and Blades ..... 15&10%

Scroll—

Barnes' No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, wi hout border, $18; with border, $ 0. ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete $4.00 ..... 15&10%

Scale Beams—See *Beams, Scale.*

Scales—

Family, Turnbull's ... ...50@50¢10%
Hatch, Counter, No. 171, good quality ..... doz. $17.00@18.00
Hatch, Tea, No. 161...doz. $5.75@6.00
Union Platform, Plain ....$2.00@2.10
Union Platform, Striped..$2.15@2 25
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Chatillon's Grocers' Trip Scales 50%
Pelouze Scales—Family, Candy, Grocers' and Postal 33⅓%
"The Standard" Portables ..... 40&50%
"The Standard" R. R. and Wagon 60%

Scrapers—

Box, 1 Handle ..... doz $2.00
Box, 2 Handle ..... doz. $3.00@4.00
Ship, No. 1, doz. $3.50; No 2. $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 40&10%
Foot, W. E. Pratt Mfg. Co. ₱ doz. $1.15@$1.25

Screen Window and Door Frames—See *Frames.*

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $2.40@2.50; 1½, $2.60@2.65; 1¼, $3.35@3.50
Bench, Wood, Beech..doz. $2.00@2.20
Hand, Wood ..... 30¢10@40%
Hand, Grand Rapids 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95 ..... 65¢10@ ....%
Coach and Lag, Gimlet Point, list Jan. 30, '95 ..... 65&5@ %
Hand Rail, list Jan. 1, '81....82½&2%

Jack Screws—

Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W ..... 40@40&10%
Sargent ..... 70&10&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron 50%
Flat or Round Head, Brass 50%

Set and Cap—

Set (Iron or Steel) ..... 75@75&5%
Sq. Hd. Cap ..... 70@70&5%
Hex. Hd. Cap ..... 70@70&5%

Wood—

List Nov. 10, 1898. Discounts adopted June 28, '99.
Flat Head, Iron 82½%
Round Head, Iron 80%
Flat Head, Brass ..... 77½&10%
Round Head, Brass ..... 72½&10%
Flat Head, Bronze 72½%
Round Head, Bronze 70%
Drive Screws 82½%
Note.—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—See *Trade Report.*

Scythe Snaths—See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise ..... 25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls ..... doz. $2.00
Wood Hdle., 14 Awls, 6 Tools ... doz. $2.35@2.40
Aiken's Sets, Awls and Tools: No. 20, ₱ doz. $10.00. 60&10@60&10&5%
Fray's Adj. Tool H'dls ...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7. ..... 50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $19; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe ₱ doz. $9.00

Nail—

Round, assorted ..... gro. $3 25@3.75
Octagon ..... gro. $4 25@4.75
Knurled, Good ..... gro. $6.00
Buck Brothers 27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Snell's Corrugated, Cup Pt. 50%
Snell's Knurled, Cup Pt. ..... 60&5%

Rivet—

Regular list ..... 70¢5@75%

Saw—

Aiken's Genuine ..... ₱ doz. $4.50@5.00
Aiken's Imitation ..... ₱ doz. $3.00@3.10
Atkin's Criterion ..... ₱ doz. $6.00
Atkin's Adjustable ..... ₱ doz. $6.00
Bemis & Call Co.'s Cross Cut ..... 30&5%
Bemis & Call Co.'s Plate 20%
Bemis & Call Spring Hammer ..... 30&5%
Disston's Star and Mona ch 25%
Hammer, Bemis & Call Co.'s new Pat. 40%
Morrill's No. 1, $15.00 ..... 40&20%
Nos. 3 and 4, Cross Cut, $23.00. 40&20%
No. 5, Mill, $31.00 ..... 40&20%
No. 10, $15.50 ..... 40&20%
No. 11, $16.00 ..... 40&20%
Taintor Positive, ₱ doz. $18 ..... 60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron ....doz. $1 00@1 25
Wood ..... doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.) ..... 50&10%
Goodell's, ₱ doz. $9.00 ..... 15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$15 00*	*15.00*	*17 00 gro.*
Cheap	*$9.00*	*10 00*	*11.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap ..... 70¢5@70¢10%
" Nickel..60¢5@60¢10%
Fair qual. Jap...80¢10@80¢10¢10%
" Nickel ..... 75¢5@75¢10%
Tailors' Shears ..... 40@40¢10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailors' Shears ..... 40@40&5%
National Cutlery Co., Nickel ..... 60&10%
National Cutlery Co., En Hdls ..... 70&10%
Seymour's, Jap ..... 70@70&5%
Seymour's Nickel ..... 60@60&5%
Seymour's Tailors' Shears 40%
Wilkinson's Hedge 50%
Wilkinson's Sheep 15%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10% Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin. 40¢10%
Niagara Snips 40%
Seymour's ..... 40@40&5

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company Pruning Shears all grades ..... 50&5%
Orange Shears ..... 50&30%
Grape ..... 50&10%
Tree Pruners 75%
P., S. & W. Co. 60%
Seymour's ..... 60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller ..... 60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list. 80&10@80&10&7½
Reading ..... 70&10@75%
R. & E. ..... 60&10@60&10&5%
Wrightsville, Hatfield Pattern.... 80&10%

Sliding Shutter—

Reading list ..... 70&10@75%
R. & E. ..... 60@60&10%
Sargent's list ..... 60@60&10%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, all gauges ..... 60&5%
Club, Rival, Climax, 10 and 12 gaug .. 65&5%
Paper Shells, Empty:
Club, Rival, Climax, 14, 16 and 20 gauge (67.50 list) ..... 20&10&5%
Club, Rival, Climax, 10 and 12 auge. 33⅓&5%
Acme, Leader, New Rapid, S mokeless, 10, 12, 16 and 20 gau e .. 33⅓&10&5%
Trap and Metal Lined, 10, 12 16 and 20 gauge ..... 33⅓&10&5%
Primrose Club, Blue Rival, Yellow Rival, New Climax, 10, 12, 16 and 20 gauge 20%
High Base, Nitro, Repeater, Defiance, 10, 12, 16 and 20 gauge 15%

Shells, Loaded—

Loaded with Black Powder ..... 40¢5%
Loaded with Nitro Powder ..... 40¢10¢10¢5%

Ship Tools—

L. & I. J. White 25%

Shoes, Horse, Mule, &c.—

Factory Shipments:
Burden's, all sizes $3.50
Other makes $3.35

Shot—

Drop, up to B, 25-lb. bag...$1.35@1.45
Drop, up to B, 5-lb. bag ..... .30
Drop, B and larger, 25-lb. bag.... $1.60@1.70
Drop, B and larger, 5-lb bag. .35
Buck, 25 lb. bag..... .....$1.60@1.70
Buck, 5-lb. bag..... .35
Chilled, 25-lb. bag ..... $1.60@1.70
Dust Shot, 25 lb. bag 2.00
Dust Shot, 5-lb. bag ..... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1,	*B2,*
	1st Grade.	*2d Grade.*
Plain Back	*$10.50*	*$9 60*
Strap Back	*9.90*	*9 00*
Cleveland Pat'n	*10.20*	*9.30*

	C3,	*D4,*
	3d Grade.	*4th Grade.*
Plain Back	*$8.70*	*$8.10*
Strap Back	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 50c doz. Black deduct 30c doz.
Note.—The above recently advanced prices to small retailers are often cut by jobbers.

Shovels and Tongs—

Brass Head .....60&10@60&10&10%
Iron Head .....60&10@60&10&5%

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@12.00
Buffalo Metallic, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$10.00	$12.00	$13.20

Eclipse.....₱ gr. $9.00@ 9.50
Hunter's Genuine....₱ gr. $12.00@12.50
Shaker (Barler's Pat.) Flour Sifters....
₱ doz., $3.00.....25%

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....$0.75@0 80
Mesh 20, Nested, doz..... .85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Low list.....65@65&5%

NOTE.—*The low list is now generally used, but some jobbers use high list.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted 45%
L. & G.....50%

Skeins, Wagon—

Malleable Iron.....70&10@75&10%
Steel .....45@45&5%
I. I. & B. Co. Steel.....45%

Slates—

"D" Slates.....50&10@50&10&10%
Unexcelled Noiseless Slates.....
60&6 tens@60&6 tens&5%
Wire Bound.....40&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....50@50&5%
Covert Mfg. Co.:
Decoy.....45&2%
High Grade.....45&2%
Jockey.....45&1 &2%
Trojan.....45&10&2%
Covert's Saddlery Works:
Banner.....75%
Crown.....70%
Triumph.....70%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&10&5%
Champion.....40&10%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....55&1 @65&10&10%
Sargent's Patent Guarded.....
70&10@70&10&10%

Snaths—

Scythe.....65%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware .....50&10@60&10%
Wm. Rogers M'f'g. Co.....50&10%

Miscellaneous—

German Silver .....60&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55&55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

1¼ in. and wider...Blk. Hf Brt. Brt. Tested and Temp 5¾ 5¾ 6c lb
Oil Tested and Tempered..... 6¼ 6¾ 7c lb
Cliff's Bolster Springs.....3 %
Cliff's Seat Springs.....₱ pair 55%

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....35%

Squares—

Nickel plated.... } *List May 1, '95..*
Steel and Iron... } 70@70&5@..%
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap .....doz. $2.00@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron .....doz. $0.80@1.35
Iron, Porcelain Lined doz. $3.25@3 50
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind..... lb. 9@9½c
Electricians', Association list.....80%
Fence Staples, same price as Barbed Wire, See Trade Report.
Poultry Netting.....lb. 5½@6c
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%
John Wilson's, list Sept. 1, '94.....25%

Steelyards.....40@40&10%

Stocks and Dies—

Blacksmiths' .....35@40%
Gardner.....50%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25&30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '93..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ b...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 8 in.....80¢ } 33⅓@ 33⅓&10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5 in. $2.50
Arkansas Stone, No. 1, 5¼ to 8 in. $3.50
} 35%@33⅓&10%
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....25&5%
Tapin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal .....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points...doz. 70@75c
Cast Steel, Polished.....*doz. $2.25*
Socket.....*doz. $1.75*

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co., list Jan. 17 '93.... 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90&10%
American Tinned.....90&10%
American Cut Tacks.....90%
Swedes Iron Tacks.....90&10%
Upholsterers' Tacks.....90&25%
Gimp Tacks.....90&25%
Lace Tacks.....90&25%
Trimmers' Tacks .....90&10%
Looking Glass Tacks.....70%
Bill Posters' and Railroad Tack.....
90&20%
Hungarian Nails .....80&15%
Common and Patent Brads.....70&5%
Trunk and Clout Nails:
Blued .....75&5%
Tinned.....75&5%

Miscellaneous—

Double Point Tacks.....90&5@...%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.50
Emerald, S. S. & Co.....60-gal. $4 40
Queen City S. S. & Co., 0-gal.....$3.85
Queen City S. S. & Co., 60-gal.....$4. 0

Tapes, Measuring—

American Asses' Skin...40&10@50&5%
Patent Leather.....25@25&10%
Steel .....33⅓@40%
Chesterman's.....25@25&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic .....30&5%

Thermometers—

Tin Case.....80&10@80&10&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White .....20@20&5%

Saw—

Atkins' new list.....40%
Simonds'.....33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....75@75&10%
Newhouse.....40@40&5%
Hawley & Norton.....60&10@65%
Victor (Oneida Pattern)...70&5@70&10%
Star (Blake Pattern).....65@65&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.8@9c
Mouse, Round or Square Wire.....
doz. $0.85@1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat.....₱ doz. $15.00
No. 3, Rat.....₱ doz. $5.85
No. 3½, Rat .....₱ doz. $4.50
No. 4, Mouse .....₱ doz. $4.30
No. 5, Mouse.....₱ doz. $3.00
Schuyler's Rat Killer, No. 1, ₱ gr. $13.50; No. 2, ₱ gr. $15.00
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mouse, $0.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme.....
doz. $1 25; gro. $14.50@15.00
Harper, Champion or Paragon
doz. $1.50; gro. $17.00

Trimmers, Spoke—

Bonney's No. 1, ₱ doz. $3.00; No. 2, $4.00
Douglas', ₱ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Diston Brick and Pointing.....30%
Diston Plastering.....25%
Diston "Standard Brand" and Garden Trowels.....40%
Peace's Plastering.....25@25&5%
Rose Brick and Plastering...3 @30&10%
Woodrough&McFarlin, Plastering.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*
Galv nized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $6.25; No. 20, $6.75; No. 30			$7 50

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*20c*	*24c*
No. 12, ¼ and ½-lb Balls	*17c*	*20c*
No 18, ¼ and ½-lb. Balls	*14c*	*17c*
No. 24, ¼ and ½-lb. Balls	*14c*	*17c*
No 36, ¼ and ½-lb. Balls	*13c*	*16c*

Chalk Line, Cotton, ½-lb. Balls.....
18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....7@8c
Cotton Wrapping, 5 Balls to lb .....
9@16c
American 2-Ply Hemp, ¼ and ½-lb. Balls .....10@12c
American 3-Ply Hemp, 1-lb. Balls..
10@12c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....8c
India 3-Ply Hemp, 1-lb Balls.....8c
India 3-Ply Hemp, 1½-lb. Balls.....
7@7½c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls.6½c
Mason Line, Linen, ½-lb. Balls...15c
No. 264 Mattress, ¼ and ½-lb. Balls 8½c
Wool.....5@5½c

Vises—

Solid Box.....60@60&5%
Bonney's Saw Vises.....40&10%

Parallel—

Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....20@25%
Massey's Clincher.....40@40&10%
Merrill's.....20%
Miller's Falls.....45&10%
Parker's.....20@25%
Parker's Oval Slide.....50&10%
Parker's Victor.....30%
Prentiss.....20@25%
Sargent's.....70&10@70&10&10%
Simpson's Adjustable.....40%
Stephens'.....25@30%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Diston's D 3 Clamp and Guide, ₱ set $40.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&7½%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&5%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up	*60c*
B. E., 9 and 10	*70c*
B. E., 8	*80c*
B. E., 7	*80c*
P. E., 11 up	*$1.00*
P. E., 9 and 10	*1.25*
P. E., 8	*1.50*
P. E., 7	*1.50*
Ely's B. E., 11 and larger	*$1.70@1 75*
Ely's P. E., 12 to 20	*$3 00@3.25*

Dis. 50&5%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60@60&7½%
Unground.....65@65&10%
White Enameled Ware:
Muslin Kettles 75&10@75&10&5%
Boilers and Saucepans...55@55&5%
Tinned Boilers and Saucepans.....
55@55&5%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 40%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95 .....40&10%
Second Quality, Agate Nickel Steel..65% 70&10@70&10&10%
Iron Clad:
Lipped Ware, high list.....70%
Preserve Ware, special list.....33⅓%
Mottled Ware, big list.....75&15%
Never Break Enameled.....50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*40c*	*45c*	*50c*	*60c*

Steel Hollow Ware.

Avery Spiders & Griddles .....70@70&5%
Avery Kettles.....60@60&10%
Lava.....50&5%
Never Break Spiders and Griddles.....
70@70&5%
Never Break Kettles..... 60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60@60&10%
Solid Steel Ware, Enameled ..... 50&5%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5%

Washboards—

Solid Zinc:	₱ doz
Crescent, family size, bent frame	$3.00
Red Star, laundry size, stationary protector	$4.25
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector	$2.50
Wilson, family size, bent frame	$2.50
Single Zinc Surface:	
Naiad protector, family size, open back perforated	$2.25
Saginaw Globe, protector, family size, ventilated back	$2.10
Wilson, bent frame, family size, ventilated back	$2 10

Washers—

Leather, Axle—

Solid.....80@10&10@10&85%
Patent.....85@85&5%
Coil: ⅜ 1 1½ 1¾ *Inch.*
12c 13c 14c 16c *per 100*

Iron or Steel—

Size bolt ... 5-16 ⅜ ½ ⅝ ¾
Washers....$6.00 5.10 3.80 3.60 3.40
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.
NOTE *Jobbers' prices generally lower than manufacturers'.*

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Weaners—
Tyler's New Ha ter—No. 1 ₱ doz. $3.45; No. 2, $3.70; No 3, $4 40; No 4 $4.90
Tyler's Success—Nos. 1 and 2, ₱ doz. $3.70; No. 3, $2.00; No. 4, $2 30.

Wedges—
Oil Finish.....*lb.* 2.70@2.85c
Axe Finish.....*lb.* 3.00@3.10c

Weights, Sash—
Carloads at factory.....$18.00@20.00
Less than carloads at factory.....$20.00@24.00
Note —Some Foundries are naming higher prices.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1 75@2 00; 10-in., $2.25@2 60; 12-in., $2.75@3.25; 14-in., $4 00@4.50

Wire and Wire Goods—
Market: Nos. 6 to 16:
Br. & Ann.....70&5@72½%
Cop'd.....65&5@67½%
Galv.....65&5@67½%
Tin'd, Tin'd list.....72½&5@75%
Stone, Br. and Ann'd:
Nos. 19 to 26.....77½@77½&2½%
Nos. 27 to 36.....77½&5@77½&7½%
Annealed Wire on Spools.....60&10@60&10&5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
Iron and Brass, list July 1, 1899....80&10@80&10&10%

Wire Cloth and Netting—
Galvanized Wire Netting.....80@80&5%
Painted Screen Cloth per 100 ft..$1 25@...

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....75&10@75&10&5%
Baxter's S.....70%
Coes' Genuine.....33⅓&10&5&5&3%
Coes' "Mechanics'.33⅓&10&10&5&5&3%
Acme.....60@60&5%
Aiken's Peach (Bright).....$2.00@3.20
Alligator.....75%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70&10@75%
Solid Handles, P. S. & W.....40&10&5%
Stevenson.....60&10&10%
Stillson's.....55%

Wrought Goods—
Staples, Hooks, &c., list March 17, '92.....85@85&10%

Yokes, Neck—
Covert Saddlery Works, Trimmed...70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'..20%

Zinc—
Sheet.....*lb* 7¾c@8c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7½@ 8¼
Lead, American White, in Oil:
Lots of 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....@ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price..@ 1¼
Lead White, Dry in bbls.....@ 5½
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....₱ ℔ 4½@ 5
Zinc, Paris, Red Seal.....@ 8½
Zinc, Paris, Green Seal.....@ 9½
Zinc, Antwerp, Red Seal.....@ 7½
Zinc, Antwerp, Green Seal.....@ 8½
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over.....@11¾
lots less than 1 ton.....@12¼
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over.....@10¼
lots of less than 1 ton.....@11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.....₱ ℔ 6 @10
Black, Drop, Amer.....2½@ 4
Black, Drop, Eng.....5 @10
Black, Ivory.....9 @20
Blue, Celestial.....₱ ℔ 5½@ 8
Blue, Chinese.....33 @36
Blue, Prussian.....28 @30
Blue, Ultramarine.....7 @35
Brown, Spanish.....1½@ 1
Brown, Vandyke, Amer.....2½@ 5½
Brown, Vandyke, Foreign.....2½@ 5½
Carmine, No. 40, in bulk.....$2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.35@ ..
Carmine, No. 40, in ounce bot. 2.40@3.50
Green, Chrome, ordinary.....5 @ 6
Green, Chrome, pure.....19 @25
Lead, Red, bbls. and ½ bbls.....@ 6
Lead, Red, kegs.....@ 6½
Litharge, bbls. and ½ bbls.....@ 6
Litharge, kegs.....@ 6½
Ocher, French Washed.....1¼@ 2½
Ocher, German Washed.....4½@ 5
Ocher, American ...₱ ton $10.00@15.00
Orange Mineral, English..₱ ℔ 9 @ 9½
Orange Mineral, French.....10½@10¾
Orange Mineral, German.....9 @ 9½
Orange Mineral, American....7¾@ 8
Red, Indian, English.....4½@ 8½
Red, Indian, American.....3 @ 3½
Red, Turkey, Eng. ll h.....7½@10
Red, Tuscan, English.....7 @10
Red, Venetian, Amer..₱ 100 ℔.80 @1.10
Red Venetian, English ₱ ℔....1¼@ 2
Sienna, Italian, Burnt and Powdered.....₱ ℔ 2¾@ 5
Sienna, Ital., Raw, Powd.....2½@ 5
Sienna, American, Raw.....1¼@ 1½
Sienna, American, Burnt and Powdered.....₱ ℔ 1¼@ 1½
Talc, French.....₱ 100 ℔ $1 10 @1.25
Talc, American.....50 @65
Terra Alba, French, ₱ 100 ℔..80 @1.00
Terra Alba, English.....85 @1.00
Terra Alba, American No. 1.....65 @70
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2¼@ 3½
Umber, Turkey, Raw & Powd. 2¼@ 3½
Umber, Bnt. Amer.....1¼@ 1½
Umber, Raw, Amer.....1¼@ 1½
Yellow, Chrome.....10 @25
Vermilion, American Lead.....10 @20
Vermilion, Quicksilver, bbls or kegs.....@64
Vermilion, Quicksilver, bags.....@65
Vermilion, Quicks'r, sm'r pkgs.@66
Vermilion, English, Import..65 @80
Vermilion, Artificial.....5 @20
Vermilion Chinese.....80 @90

Colors in Oil.

Black, Lampblack. Best.....13 @14
Black, Lampblack, Common...10 @11
Blue, Chinese.....35 @40
Blue, Prussian.....30 @35
Blue, Ultramarine.....12 @16
Brown, Vandyke.....8 @13
Green, Chrome.....8 @14
Green, Paris.....20 @24
Sienna, Raw.....8 @13
Sienna, Burnt.....8 @13
Umber, Raw.....8 @12
Umber, Burnt.....8 @12

Miscellaneous.

Barytes, Foreign, ₱ ton....$18.00@20.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude.....8.00@10.00
Chalk, in bulk.....₱ ton 2.15@ 2.25
Chalk, in bbls.....₱ 100 ℔ 35@ ..
China Clay, English..₱ ton 11.00@17.00
Cobalt, Oxide.....₱ 100 ℔ ....@ 1.70
Whiting, Common. ₱ 100 ℔ .42½@ .50
Whiting, Gilders.....47@ .50
Whiting, extra Gilders'.....57@ .64

Putty.

In barrels and ½ bbls.....1 4-10@ 1¼
In tubs.....1½@1 6-10
In tin cans.....1¾@ 2
In bladders.....1¾@ 2

Spirits Turpentine.

In Southern bbls.....@52
In machine bbls.....@53½

Glue.

Low Grade.....₱ ℔ 13 @15
Cabinet.....13 @16
Medium White.....14 @16
Extra White.....16 @25
French.....12 @25
Irish.....13 @15

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₱ gal. 40 @41
Linseed, City, boiled.....42 @43
Linseed, Sa e and West'n, raw ..@39
Linseed, raw Calcutta seed.....@50
Lard, Prime City, present make 41 @43
Lard, Extra No. 1.....35 @37
Lard, No. 1.....31 @32
Cotton-seed, Crude.....21 @21¼
Cotton-seed, Summer Yellow, prime.....26 @26¼
Cotton-seed Summer Yellow, off grades.....25 @25½
Sperm, Crude.....50 @52
Sperm, Natural Spring.....@..
Sperm, Bleached Spring.....@..
Sperm, Natural Winter.....55 @..
Sperm, Bleached Winter.....60 @..
Whale, Crude.....@..
Whale, Natural Winter.....@43
Whale, Bleached Winter.....@45
Whale, Extra Bleached Win.....@48
Menhaden, Crude, Sound.....24 @24
Menhaden, Light Pressed.....28 @29
Menhaden, Bleached Winter.....@41
Menhaden, Extra Bleached....34 @35
Tallow, Western, prime.....44 @45
Cocoanut, Ceylon.....5½@ 5¾
Cocoanut, Cochin.....6 @ 6½
Cod, Domestic.....33 @35
Cod, Newfoundland.....34 @40
Red Elaine.....28 @30
Red Saponified.....₱ ℔ 4½@ 4¼
Bank.....₱ gal. ..@27
Straits.....@28
Olive, Italian, bbls.....52 @57
Neatsfoot, prime.....45 @50
Palm, prime, Lagos.....₱ ℔ 5¼@ 5¼

Mineral Oils.

Black, 29 gravity, 25@30 cold test.....₱ gal. 7¾@ 8¼
Black, 29 gravity, 15 cold test. 8¼@ 9¼
Black, summer.....7¼@ 7¾
Cylinder, light filtered.....13¾@16¼
Cylinder, dark filtered.....11¾@16¾
Paraffine, 23¼@24 gravity.....9¼@ 9¾
Paraffine, 25 gravity.....8½@ 8¾
Paraffine, 28 gravity.....7¼@ 7¾
Paraffine, red, No. 1.....9 @ 9½
In small lots ⅛¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

OCTOBER 4, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ ℔; Square, 0.8¢ ₩ ℔	
1 to 1⅜ in. round and square	₩ ℔ 2.50@2.60¢
1¼ to 4 in. x ⅛ to 1 in.	
Refined Iron:	
1 to 1⅜ in. round and square	₩ ℔ 2.60@2.70¢
1⅛ to 4 in. x ⅛ to 1 in.	
1¼ to 4 in. x ¼ to 5-16	₩ ℔ 2.80@2.90¢
Rods—¼ and 11-16 round and square	₩ ℔ 2.80@2.90¢
Angles:	Cts ₩ ℔
3 in. x ¼ in. and larger	3.00¢
3 to 3½ in. x 3-16 in.	3.25¢
1¼ to 3 in. x ¼ in.	3.30¢
1¼ to 3½ in. x 3-16 in. and thicker	3.25¢
1 to 1¼ in. x 3 16 in.	3.30¢
1 to 1¼ x ⅛ in.	3.35¢
¼ x ⅛ in.	3.45¢
½ x ⅛ in.	3.50¢
⅝ x ⅛ in.	4.60¢
⅛ x 3-32 in.	5.10¢
Tees:	
1 in.	3.40¢
1¼ to 2½ in.	3.30¢
3 in. and larger	3.10¢
1 in. and larger	3.50¢
Beams	3.50¢
Channels	3.50¢
Bands—1½ to 6 x 3-16 to No. 8	₩ ℔ 2.90 @ 3.00¢
"Burden's Best" Iron, base price	₩ ℔ 3.40¢
Burden's "H. B. & S. Iron, base price	₩ ℔ 3.20¢
"Ulster"	₩ ℔ 3.40¢
Norway Bars	3.80 @ 4.30¢
Norway Shapes	4.30 @ 4.80¢

Merchant Steel from Store—

	per ℔
Open Hearth and Bessemer Machinery	2.60 to 2.70¢
Toe Calk, Tire and Sleigh Shoe	$3.00@3.25¢
Best Cast Steel, base price in small lots	7 ¢
Best Cast Steel Machinery, base price in small lots	9 ¢

Soft Steel Sheets—

¼ inch	3.80¢	No. 14	3.40¢
3-16 inch	3.40¢	No. 16	3.50¢
No. 8	3 80¢	No. 18	3 55¢
No. 10	3.80¢	No. 20	3.60¢
No. 12	3.85¢	No. 22	3.65¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ ℔, 3.45	3.45¢
Nos. 17 to 21	₩ ℔, 3.50	3.55¢
Nos. 22 to 24	₩ ℔, 3.55	3.65¢
Nos. 25 and 26	₩ ℔, 3.60	3.70¢
No. 27	₩ ℔, 3.65	3.75¢
No. 28	₩ ℔, 3.70	3.85¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 10½¢
Patent Planished	₩ ℔ A, 9½¢; B, 8½¢, net.
Patent Planished Sheet Steel	₩ ℔ 8½¢

Galvanized.

	B.	B.
Nos. 10 to 16	₩ ℔, 12¢	
Nos. 17 to 21	₩ ℔, 13¢	
Nos. 22 to 24	₩ ℔, 14¢	
Nos. 25 to 26	₩ ℔, 15¢	
No. 27	₩ ℔, 16¢	
No. 28	₩ ℔, 17¢	
No. 29	₩ ℔, 19¢	67½@70% off.
No. 30	₩ ℔, 21¢	

36 in. 1¢ ₩ ℔ higher.

Foreign Steel from Store—

Best Cast	₩ ℔ 14 ¢
Extra Cast	₩ ℔ 16½ @ 17 ¢
Swaged, Cast	₩ ℔ 16 ¢
Best Double Shear	₩ ℔ 14 ¢
Blister, 1st quality	₩ ℔ 12 ¢
German Steel, Best	₩ ℔ 10 ¢
2d quality	₩ ℔ 9 ¢
3d quality	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₩ ℔ 14 ¢
2d quality	₩ ℔ 13 ¢
3d quality	₩ ℔ 11 ¢
R. Mushet's "Special"	₩ ℔ 46 ¢
" " Annealed	₩ ℔ 75 ¢
" " "Titanic"	₩ ℔ 19 ¢
Hobson's Choice XX Extra Best	₩ ℔ 85 ¢
Jessop Self Hardening	₩ ℔ 40 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson Self-Hardening	₩ ℔ 40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per ℔
Banca, Pigs	34¼¢
Straits, Pigs	33½¢
Straits in Bars	34¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.50
IX, 14 x 20	9.00
Melyn Grade:	
IC, 14 x 20	7.00
IX, 14 x 20	8.50
Allaway Grade:	
IC, 14 x 20	6.15
IX, 14 x 20	7.35

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 ℔	$5.80@5.40
IX, 14 x 20	6.25@6.30
IXX, 14 x 20	7.80@7.60

American Terne Plates—

IC, 20 x 28	$10.50
IX, 20 x 28	12.50

Tin Boiler Plates, American—

IXX, 14 x 26	112 sheets	$13.00
IXX, 14 x 28	112 sheets	14.00
IXX, 14 x 31	112 sheets	15.50

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	19¼@19¾¢
Ansonia grade Casting	18¾@19 ¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Net.

Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 50 lb.	24 oz. to 32 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9⅜ to 11 lb.	10 oz. and 11 oz., 7½ to 9⅜ lb.	8 oz. and 9 oz., 6¼ to 7½ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	22½	23½	23½	23½	24½	25½	28½	31½	
30	96	72	22½	23½	23½	23½	25	26⅔	31⅔		
30	.....	96	22½	23½	23½	24	26⅔				
36	72	.....	22½	23½	23½	24	25⅔	29½	36⅓		
36	96	72	22½	23½	23½	24	26⅔	31⅔			
36	120	96	22½	23½	23½	24	25⅔				
36	.....	120	22½	23½	23½	24					
48	72	.....	22½	23½	23½	24	25½	29½	36⅓		
48	96	72	22½	23½	23½	25	27	30⅔			
48	120	96	22½	23½	24½	26	30⅔				
48	.....	120	22½	23½	25⅔	28⅔					
60	72	.....	22½	23½	23½	25⅔	28½	33⅓			
60	96	72	22½	23½	24½	26⅔	31⅔				
60	120	96	22½	23½	25⅔	28⅔					
60	.....	120	22½	24	26⅔	30⅔					
72	96	.....	22½	23½	25⅔	30⅔					
72	144	96	22½	24½	27⅔	32⅔					
72	.....	144	23½	25⅔	30⅔						
108	120	.....	23½	25⅔	31⅔						
108	.....	120	25⅔	26⅔							
wider than 108	144	.....	27½	30⅔							

Bolt Copper, ⅜ inch diameter and over, ₩ ℔ 2½¢

Circles, Segments and Pattern Sheets, 3¢ ₩ ℔ advance over price of sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.

All Polished Copper, 86 in. wide and under, 1¢ ₩ ℔ advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 in. wide, 2¢ ₩ ℔ advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ ℔ more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ ℔	26½¢
12 oz. and up to 14 oz. to square foot, ₩ ℔	27½¢
10 oz. and up to 12 oz., ₩ ℔	29½¢
Lighter than 10 oz., ₩ ℔	32½¢

Circles less than 8 in. diameter, 2¢ ₩ ℔ additional.

Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8	9 and 10		11 and 12
	Base	1/16		1/16 ₩ ℔ adv.
Nos.	13	14	15	16
	1/16	3/16	1¢	1 1/16 ₩ ℔ adv.
Nos.	17	18	19	20
	1 1/16 ¢	2¢	2 1/16 ¢	2 1/16 ₩ ℔ adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net. Outside Diameter.

Stubs' W.G.	B. & S. W.G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	33	32	31	28	27
19	17	62	47	43	40	37	36	35	34	33	32	29	28
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	33	34
22	21	71	56	48	44	43	42	40	39	38	37	34	36
23	22	76	61	50	46	44	43	42	41	40	39	36	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	72	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	20	21	25	27	28¢₩℔

Copper, Bronze or Gilding Tubes, 3¢ ₩ ℔ additional

Brazed Brass Tubing.

(To No. 19, inclusive.) Feb. 26 1896

Brown & Sharpe's gauge standard.

	Per ℔.
Plain Round Tube, ¼ in. up to 2 in.	$0.35
" " ⅜ " ¼ "	.36
" " ½ " ¼ "	.38
" " ⅝ " ¼ "	.41
" " ¾ " ¼ "	.48
" " 5-16 " 5-16 "	.65
" " ⅜ " ¼ "	1.00
" " 3-16 " 3-16 "	1.50
" " ¼ " 3-16 "	Special
Smaller than ¼ inch	.40
3 inch and larger	.45
Over 3 inch to 3½ inch, inclusive	.50
Over 3½ inch	
Bronze and Copper, advance on Brass List, 3 cents.	
Discount from list 5	20@25%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass Wider than and including	in. 9 13	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39
Common High Brass Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.

Add ½¢ ₩ ℔ additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 10%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.83
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	8.95
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 10%; Copper Wire, Net.
List November 16, 96.
Spring Wire, 2¢ ₩ ℔ advance.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ ℔

Western Spelter	5¼@5¾¢

Zinc.

Duty: Sheet, 2¢ ₩ ℔.

600 ℔ casks	6¼¢ | Per ℔ 6¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.

American Pig	5@5¼¢
Bar	5¾¢
Pipe (full lengths), subject to discount 20%	6¼¢
Pipe cut lengths), subject to discount 20%	7¼¢
Tin Lined Pipe, subject to discount 20%	12½¢
Block Tin Pipe, subject to discount 20%	45¢
Sheet (full rolls) subject to discount 20%	7¾¢
Sheet (cut rolls (subject to discount 20%	8¼¢
Old Lead in exchange, 4¢ ₩ ℔.	

Solder.

½ & ½, guaranteed	21¢
No. 1	18½@19¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ ℔ 11¾¢
Hallett's	₩ ℔ 10¾¢
U. S.	₩ ℔ 10½¢

Aluminum—

Duty: Crude, 8¢ ₩ ℔. Plates, Sheets, Bars and Rods, 13¢ ₩ ℔.

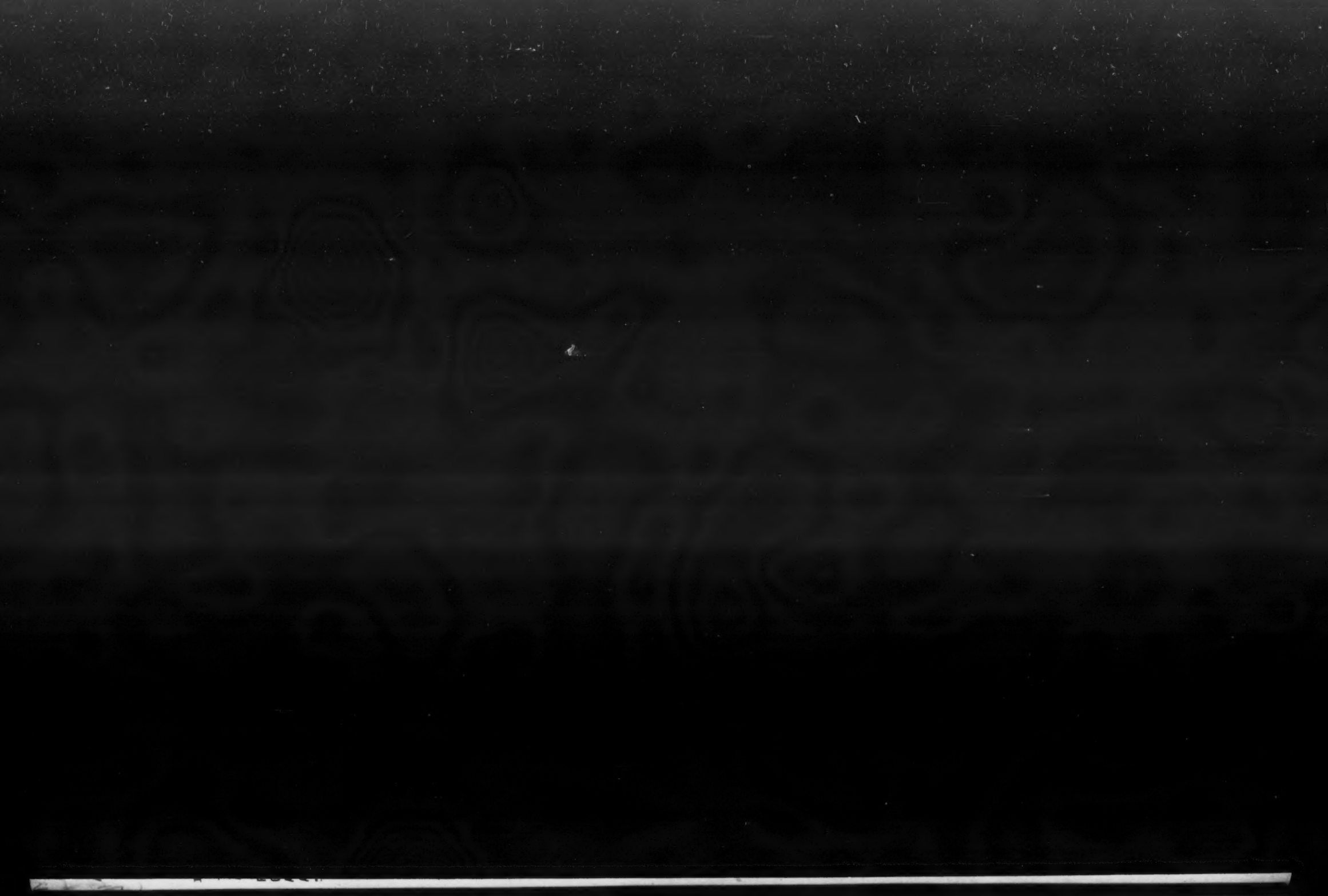
No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:	
Small lots	₩ ℔ 37¢
100-℔ lots	₩ ℔ 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:	
Small lots	₩ ℔ 34¢
100-℔ lots	₩ ℔ 33¢

Aluminum Sheet, B. & S. gauge. 50 ℔ or more.	6-in. Wider than	14-in. And including	24-in. 14-in.	30-in. 24-in.	30-in.
	₩ ℔.	₩ ℔.	₩ ℔.	₩ ℔.	₩ ℔.
Nos. 18 to 19	$0.40	$0.42	$0.43	$0.45	
No. 20	.42	.44	.45	.47	
Nos. 21 to 23	.44	.46	.48	.51	
No. 24	.44	.48	.51	.53	
No. 25	.45	.49	.52	.55	
No. 26	.45	.52	.57	.57	
No. 27	.46	.55	.60	.60	
No. 28	.46	.55	.62	.62	
No. 29	.47	.56	.67	.67	
No. 30	.48	.62	.75	.75	

Note.—Lots of less than 50 ℔ 5¢ ₩ ℔ extra.

Aluminum Wire, B. & S. Gauge.			
Larger than No. 9	₩ ℔ 40¢	No. 15	₩ ℔ 43¢
No. 9 to No. 10	₩ ℔ 40½¢	No. 17	₩ ℔ 50¢
No. 11	₩ ℔ 41 ¢	No. 18	₩ ℔ 55¢
No. 12	₩ ℔ 41½¢	No. 19	₩ ℔ 60¢
No. 13	₩ ℔ 42 ¢	No. 20	₩ ℔ 65¢
No. 14	₩ ℔ 42½¢	No. 21	₩ ℔ 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ ℔ 15¼¢
Light and Tinned Copper	₩ ℔ 14 ¢
Heavy Brass	₩ ℔ 10½¢
Light Brass	₩ ℔ 8¾¢
Lead	₩ ℔ 4 ¢
Tea Lead	₩ ℔ 3½¢
Zinc	₩ ℔ 4 ¢
No. 1 Pewter	₩ ℔ 17½¢
No. 2 Pewter	₩ ℔ 15 ¢
Tin Plate Scrap	₩ ton $3.50
Wrought Scrap Iron	₩ gross ton $12.50
Heavy Cast Scrap	₩ gross ton $11.50
Stove Plate Scrap	₩ gross ton $8.00
Burnt Iron	₩ gross ton $5.50